IN BITES AND PIECES:

A STUDY OF FOOD CONSUMPTION

OF EDINBURGH PRIMARY SCHOOL CHILDREN

by

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Cette thèse est dediée à ma mère, Madame Georgette Rousseau, qui m'a si souvent répété que tout ce qui mérite d'être fait doit être bien fait.

I declare that this thesis has been written by me and that this work is entirely my own.

Nicole Rousseau

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ABSTRACT

This study originated from a desire to obtain relevant data that could guide the development of future strategies of intervention in the nutrition of primary school children. An ecosystemic approach was adopted to incorporate the three dimensions believed to be determinant to the eating behaviour namely, the environment, the consumer of foods with bio-psychological and socio-cultural characteristics, and the interactions between environment and consumer. It was hypothesized that these dimensions contributed to developing and reinforcing among children the set of values (referred to as a culture of childhood) underlying their behaviour. The study addressed itself to the following elements of the ecosystemic model retained: availability of food in the school environment and its influence on patterns and quality of consumption, the physical characteristics of foods consumed by children, socio-economical factors, and patterns of consumption of children.

A 24-hour recall was obtained from 192 children attending two private schools and two schools located in a depressed area of Edinburgh; a game of pretend was used with these respondents. An inventory of shops located in the environment of each school was also done. This data collection was complemented with 22 ethnographic interviews.

The findings indicate that the proximity of shops in the school environment was related to the quality and time of food consumption; so was the amount of pocket money available. The fact of attending a school in a depressed area rather than a private school was found to be related to a smaller consumption of fruit, vegetables (if the school dinner is excluded) and milk and to a larger consumption of chips.

"Strong tastes", hard, effervescent or crispy texture, and appealing shapes were found to be typical characteristics of foods consumed in the absence of adults. Proportionately more of these foods had been eaten at room temperature or frozen than warm or cold and more of them were the size of a mouthful or smaller than of a bigger size. The visual qualities of foods were not found to be of primary importance in food selection. Eating in the absence of adults was also found to be associated with specific patterns of consumption such as the non-use of utensils and dishes, unstructured settings and consumption at any time. The data obtained through the ethnographic interviews supported most of these findings and revealed that the central cultural theme underlying children's food preferences is that eating must not interfere with playing. This theme is encapsulated in the phrase "having a playpiece at playtime in the playground". Suggestions for intervention and research are proposed.

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INTRODUCTION

The present research has originated from a broad interest in strategies of health promotion. Previous teaching experience in community health nursing and research involvement into cigarette smoking had exposed the investigator to the concept of health education and its limitations as an effective means of intervention. Her views of preventive strategies were largely influenced by two work colleagues who see unhealthy habits as epiphenomena generated by a cultural structure (Bibeau and Tremblay, 1980). Therefore, any attempt at changing behaviour must address itself to a modification of the whole set of cultural values underlying the behaviour to be changed. Such an approach was applied to a study of cigarette smoking to which the investigator was closely associated up to the stage of data collection (Tremblay et al., 1981).

As a post-graduate student in the University of Edinburgh Department of Nursing Studies, the investigator focused her interest on the eating behaviour of children. It appeared to her that the widely spread consumption of crisps, sweets, soft drinks and other non-recommended foods was one more example of the failure of health education. In line with the views expressed above, it was decided to adopt a global approach to this problem in order to identify the factors embedded into a cultural structure that contribute to inadequate food* consumption among school children. It was restricted to a population of primary school children because of the assumption that the value system of this age group is beginning to take shape, and is therefore more amenable to change.

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* The word "food" will include "drinks" throughout the rest of this thesis unless otherwise stated.

In the following chapters, the problem will be described as it was observed, and as it is stated in the literature focusing on the various factors that can explain why people eat the way they do. The relevance of this problem to nursing research will then be discussed. In Chapter 3 the conceptual framework that has guided this research will be described and the hypotheses formulated. It will become obvious then that the present study was not meant to be a nutrition survey but rather an attempt to provide an understanding of the eating behaviour of children.

The measurement methods and sampling procedures will be covered in Chapter 4, and Chapter 5 will discuss some of the ethical considerations involved in this type of research. The analysis of findings will be presented in two steps. First, in Chapter 6, the findings will be examined in relation to each of the five hypotheses. Secondly, Chapter 7 will exclusively be devoted to an ethnography of children's eating based upon a series of ethnographic interviews and observations done as part of the project. The quantitative analysis will then be re-examined through this ethnographic perspective.

In the last chapter the conceptual framework will be revisited in the light of all the findings. Some implications of the results for nursing will be discussed and recommendations for action and future research will be suggested.

CHAPTER 1

STATEMENT OF THE PROBLEM AND ITS IMPORTANCE

In the early stages of the research, it was decided to collect as many observations as possible relevant to children's nutrition so that the hypotheses would be generated from the observed facts. In this respect, the investigator's involvement in voluntary youth work has provided rich and useful material. Also, the fact of being a foreigner, in the beginning almost totally ignorant of the Scottish environment and culture, has certainly influenced this first view of the phenomenon and subsequently the rest of the research.

The present chapter will describe the early observations that were significant in identifying the research problem and in formulating the hypotheses. The importance of the problem identified and its relevance to nursing will then be briefly discussed.

1.1 Early Observations Leading to the Formulation of Hypotheses

Some features of the food market of Edinburgh are readily noticeable to a foreigner and suggest the popularity of greasy foods and sweets. In supermarkets, biscuits, pastries and confectioneries occupy a considerable space of the shelves. The local food shops almost invariably include a chip shop and a confectioner-newsagent which are open seven days a week. While most food stores are closed after six o'clock p.m. and all day on Sundays, mobile canteens go through virtually all the streets of the areas peripheral to the city centre from late morning until early evening. Loaded with cigarettes

and snack foods such as sweets, crisps, chewing gum and soft drinks, these canteens deliver their goods at the door step of the client. Several features seemed to make them appealing to children: they play music of children's songs loud enough to be heard in a whole block; they are brightly decorated with popular cartoons and their content can easily be seen through their large back and side windows.

The heavy pressure from the environment encouraging children to buy and consume sweet and fatty foods was best observed in a large cinema where popular films for all are often projected. This cinema had two snack bars. The ground floor snack bar offered a wide variety of chocolate bars, chocolate coated candies and other sweets displayed in a front stall, while peanuts and nuts were kept on back shelves; King Cones were also prominently displayed. The first floor snack bar sold soft drinks, hot dogs, popcorn and nuts but it also displayed in its front stall chocolate bars, chocolate coated candies, other sweets, and crisps. These two snack bars were not the only source of foods in the cinema and it is important to situate them in their global context as in the following instance. At the end of the first film, the viewer was subjected to a first series of advertisements: King Cones, Jungle Fresh salted peanuts, an advertisement of ice cream, S.R.B. hot dogs, and popcorn, this last one being described as "the real American style popcorn in this cinema now... There is so much in each cone". The viewer could then read in huge letters on the screen "CONFECTIONERY, CIGARETTES ON SALE NOW." Within seconds, the lights were turned on but two vendors (one in each alley) had already been there for a while with their well-lit tray loaded with King Cones,

sweets and crisps. At one point during the observations, sixteen clients were seen to queue in front of one vendor, half of whom were young children, while the others appeared to be adolescents. After this intermission, a second series of advertisements was projected but these ones had no connections with the foods available in the cinema. The clever match of advertising, timing and availability of foods becomes even more obvious if one considers that these observations were made on a Sunday between 16:45 and 19:30.

The effect of this marketing strategy could be observed on five young boys sitting near the investigator. Two went to buy foods during the first film and ate during both films. One of them had a box of Jelly Babies, a pack of salted peanuts, a can of Coca-Cola and another item that could not be identified; his companion had salted peanuts and Coca-Cola. Each of the three other boys had a pack of chocolate coated candies and seemed to be eating other sweets; one of them had at least fifty pence of pocket money.

Through the voluntary youth work mentioned earlier, the investigator was exposed to depressed areas of the city and was given several opportunities to observe underprivileged children purchasing foods with their pocket money. This voluntary work was done in the context of a students' society (hereafter called "the Society"), whose aim was to provide entertainment to underprivileged children and also in the context of a youth club. Especially during the Society's excursions, children were found to have a fair amount of pocket money which they appeared constantly anxious to spend. On a typical weekend trip, they used to leave home with a supply of crisps and soft drinks in

addition to around one pound of pocket money. About half this money was usually spent at the first opportunity to buy crisps, chocolate bars, sweets and soft drinks; by the end of the second day, only one or two children had any money left and almost all of it had been spent on crisps and sweets.

These food preferences were reinforced by adults who appeared to multiply occasions to present children with crisps, chips or sweets. A Christmas party snack for example consisted mainly of pastries and sweets; at the same party many presents consisted of sweets, mainly chocolate bars. During the weekend outings, jam sandwiches, biscuits, soft drinks and beans used to take precedence over fresh fruit or vegetables and milk in an attempt to reproduce what was thought to be the usual diet of these children. Between-meals snacks consisted almost invariably of ice cream cones, chips, crisps or chocolate bars. It must be pointed out however, that these foods were often the only ones available as in the case of the cinema described earlier. This fact called the attention of the investigator on the availability of foods in the environment of underprivileged children. In the district of West Pilton, well known as a depressed area of Edinburgh, there were only two fruiterers and the supermarkets offered mostly unperishable foods.

In this first stage of the research, little information was obtained about the nutrition of more privileged children but an eleven year old boy and a twelve year old girl (children of colleagues) both attending the same private school, were interviewed regarding their food intake of the previous day and their food preferences (See

Appendix I). The food consumption reported by these two children contrast with what had been witnessed during the Society's outings particularly with regard to the fresh orange juice at breakfast time and with the presence of fruit and vegetables at mealtime.

Beside environmental influences and apparent differences between social classes, other factors were soon suspected to play a role in the process through which certain foods acquire such a high status in the value system of children. Observing children purchasing foods it was found that a certain category of food stores was systematically avoided such as supermarkets, fruit and vegetable shops, baked potato shops or bakeries while newsagents and chip shops were always popular. A closer look at newsagents revealed some features that appeared to partly explain this preference. Inside these shops, many products are at children's reach either on low stands, on the counter or in boxes on the floor. A large variety of their foods are sold in small units at prices ranging from one to ten pence. Finally, crisps, ice cream, soft drinks, and sweets are often placed together with small toys, the prices of which are in the same range as the prices of the food items.

It was also interesting to observe how some foods initially avoided were becoming acceptable either because the child could not afford the most popular ones or because the foods were given. During one of the Society's outings, for example, one girl was seen buying pickled onions from a mobile canteen because she did not have enough money for any of the other foods available. Similarly, children were eager to have fresh fruit or milk when it was offered to them by adults.

Even carrots left on a counter became attractive when one boy in a group of young children asked for one; within a few minutes all the others wanted their own. On another occasion, a sudden craving for oranges was triggered by refusing the fruit to a boy who was asking for it. He began to shout "I want an orange!" repeatedly and eventually got all the other children to shout with him. In this last incident, it is quite obvious that the children's enthusiasm for oranges originated from a desire to annoy the adult who had refused to give the fruit. Usually however, it is not fruits that are forbidden but sweets. For example, the investigator learned at the beginning of the project that, in most primary schools, children are not allowed outside the school playground at break time or lunch time partly to prevent them from buying sweets from the nearest tuck shop.

Children also appeared to have eating patterns contrasting with those of adults and characterised by a disregard for manners. They were often seen eating on the pavement at the door step of the newsagent where they had bought their foods. They also seemed to find great entertainment in buying and consuming foods which they were often throwing at each other. They played with the wrappers, containers, and bottle caps. At meal time, they rarely ate quietly sitting at a table, but rather played with utensils, plates, cups, and the food itself. The following incident witnessed during one of the Society's day outings illustrates this point. A girl about ten years old was sitting on the investigator's lap eating chips bought from a chip shop for each child of the group. The chips were double-wrapped

with the inner wrapper being a sort of waxed paper and the outer one being plain brown paper. They had been flavoured with a salt and vinegar brown sauce. The girl ate the chips one by one and bite by bite, at times sucking the chips as if they were lollipops alternating with finger licking. After having eaten the last chip, she threw away the outer wrapper and licked thoroughly the sauce remaining in the inner wrapper. When this operation was completed, she put in her mouth the part of the inner wrapper that was soaked with sauce, chewed it to extract all the tasty sauce from it until only a bubble-gum-looking chew of wet paper remained. She then threw away the paper chew.

This last incident called for a closer look at the physical characteristics of the foods that appeal to children. Comparing a variety of soft drinks, confectioneries, crisps and salted peanuts with fresh fruits and vegetables, milk, fruit juice and unsalted nuts, the investigator noticed the following differences. Popular foods and drinks are brightly coloured or, if the food cannot be coloured, an attractive wrapper compensates. Brightly coloured drinks are sold in transparent containers and one company uses transparent plastic containers shaped like animals or monsters. Confectioneries often have a round shape and are sold in cylindric containers or packs (Smarties and Polos for example). Shapes of animals or of monsters are also frequently used and Wall's Ice Cream sells a pink ice cream lollipop shaped like a foot. Confectioneries are also packed in small, individually wrapped portions easy to share and their texture is chewy or hard most of the time. They also have appealing names often easy to learn for young children such as Wotsits, Chewits, Rolos, Jelly Tots

or Kit Kat. Chips sold in chip shops share some of these qualities. As opposed to mashed or baked potatoes, they are small pieces of potato, flavoured with a strong tasty sauce and they are wrapped.

When compared to the products described above, fresh fruit and vegetables look less than appealing. Their colours are never as bright as the artificial colours of Tooty Frooties or Smarties and they are not even wrapped to improve their dull look. Many fruits have a more or less round shape but they cannot easily be shared due to their relatively big size (except for grapes and berries). The texture of many fresh fruit and vegetables is rather soft and they are never as sweet or flavourful as confectioneries or chips with the salt and vinegar sauce. They do not even have names! Milk, either plain or flavoured, is always sold in opaque cartons or in transparent bottles with non-reusable caps. However, Scottish Pride has recently introduced a one-third-of-a-pint carton of milk featuring monsters and witches in an obvious effort to make it more appealing to children. Pure fruit juice is also packed in cartons or large bottles and jars.

These observations suggested that several factors influence children's food consumption such as social class, advertising and other pressures from the environment, availability of foods and their price. They also indicated a possible contrast between what children value in their eating experience and what adults appear to value. As for the suspected inadequacy of the diet, resulting from an excessive consumption of sweets, salty and greasy foods and a lack of fresh fruit and vegetables, it had already been reported in the literature.

1.2 The Problem and its Importance

Studies assessing the quality of nutrition of the population can be divided into two broad categories: those measuring the consumption of different categories of food items, and those measuring the nutrient intake regardless of the source of this intake (proper nutrition surveys). Both types will be briefly considered here.

In a booklet entitled Eating for Health (1978) the Health Departments of Great Britain and Northern Ireland summarized as follows the trends in the nutrition of the United Kingdom population since World War II:

> Since the Second World War the proportion of protein in the diet has remained approximately the same. More animal protein - milk, meat and cheese - is included in the diet and less vegetable protein, especially that in bread and potatoes. The proportion of total carbohydrates has also decreased, because less bread and fewer potatoes are eaten, but this overall reduction conceals an increase in one particular carbohydrate - sugar (sucrose).
>
> Sugar consumption has increased considerably over the past 100 years reaching a peak in 1960 of about 54 Kg or 120 lb/person/year and declining since then to 43 Kg or 95 lb/person/year in 1977. The proportion of dietary fat is now greater than in the 1940s due to an increased consumption of meat, butter, margarine, cooking fats and cream (p.25).

As a conclusion the booklet recommends the adoption of a different diet described as follows:

> ... less of the visible fats - cream, butter, margarine, the fat on meat, fried foods - and less of the invisible fats in cakes, biscuits, puddings, pastry and ice cream. Less sugar would be eaten - fewer sweets, chocolates, puddings - and less sugar added to fruit, soft drinks, tea, coffee and other beverages. To replace some of the food energy lost by these changes, the amount of bread and potatoes, fruits and vegetables in the diet would be increased. The thickness of each slice of bread could be increased, and the amount of butter or margarine spread on it decreased.

> Bread, especially wholemeal bread, and some other foods, for example porridge, would increase the amount of cereal fibre in the diet and reduce constipation (...)
>
> On the whole the British diet contains more than enough protein. It is not always appreciated that, in addition to meat, fish, eggs, cheese, and milk, bread and some vegetable foods such as peas, beans or lentils, are all substantial sources of protein. It is not necessary to eat every one of these foods every day.
>
> A reduction in the amount of salt in the diet might be beneficial (p.77).

Using more recent Household Food Consumption and Expenditure data, the Black Report (1980) showed that lower income groups eat less brown bread and fresh fruit, and more white bread, sugar and preserves, and potatoes than the higher income groups. Drawing from the National Food Survey of 1977, the same report stated that "in 1977 of 7-9-year olds in lower-income families with three or more children, 12 per cent consumed less than 2 pints (of milk) per week in the home, and over 25 per cent less than 3 pints" (p.185).

It appears that parts of the population (the lower income groups) do not comply with the recommendations stated earlier. According to the Black Report, this is partly due to inequalities in access to good food: "... access to good food and sports facilities depends also on the area in which people live and the resources they can command, and not only their personal characteristics or behaviour, or education" (p.120). McKenzie (1980) demonstrated the influences of income and food prices on food choice showing that, in general (but not always), when the price of a food item goes up, the purchase of this item decreases.

Nutrition surveys also emphasize these discrepancies between social classes. Cook et al. (1973) in a survey done among 778 children* attending Local Authority schools in four areas of Kent studied the relation between nutrient intake and socio-economic factors. They reported the following findings:

> In general, children from the higher social classes had a higher intake of nutrients/1,000 Kcal than those from the lower social classes. The differences were less striking for minerals and vitamins. The exceptions were again carbohydrate and added sugar intake/1,000 Kcal which were higher in the lower social classes (p.97).

According to the same authors, these results indicate that children from lower social classes and larger families "have diets that rely on cheaper nutrients as sources of energy rather than more expensive protein and fats" (p.98). They conclude that this discrepancy in the quality of nutrients consumed may explain the difference in the physical growth between children from lower social classes and those from upper social classes.

A more recent study of the nutritional status of poor children (aged one to twelve) in London by Nelson and Naismith (1979) reaches quite alarming conclusions. Parts of their findings appear in Appendix II. From these data, they conclude:

> While it is recognised that an individual may have an intake of nutrients below the recommended intake and still grow and develop normally, it is unlikely that an average intake of 72 per cent of the recommended intake for energy,

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* aged 8 - 11 and 13 - 15 years.

> for instance, would meet the requirements of all the children in the group. Similarly, an average intake of 80 per cent of the recommended intake for iron, and 40 per cent of the recommended intake for vitamin D would not be expected to meet the demands for these nutrients for normal growth and development, except where the effects of sunshine may lower the vitamin D requirement. Although the average intake for protein was 92 per cent of the recommended intake, this still leaves a considerable safety margin when compared with the minimum physiological requirement. However, this safety margin may be significantly diminished by the low energy intake resulting in the utilization of dietary protein for energy, and by an increased incidence of ill-health above the national averages (p.40 - 41).

The problem at the origin of this thesis can now be summarized thus: British children, particularly those from lower income groups, consume too much confectionery, salty and fried foods and not enough fresh fruits and vegetables, whole grain bread, and milk. Considering that Scotland is a relatively depressed part of Great Britain, there are reasons to believe that inadequate nutrition might be even more prevalent among Scottish children than other British children.* Although this problem of inadequate nutrition has been known for several years and the discrepancies between social classes have been documented, little is known of the factors that can explain this phenonemon. Unless these factors can be better identified, all preventive strategies are likely to fail and nurses share a responsibility in this failure.

1.3 Relevance of this Problem to Nursing

The importance for health visitors and other public health nurses to become involved in improving the nutrition of the population

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* A research team (Durnin *et al.*) at University of Glasgow is presently conducting a nutrition survey among Glasgow school children but the results are not yet available.

especially children's nutrition, has been stressed over the years by different committies and reports (Cohen Report, 1964; H.M. Inspectors of Schools Report 1979; Court Report 1976). Health visitors seem to have accepted this responsibility as nutrition with "attention given to prophylaxis" was already spelled out in 1970 as one of the items to be covered in each of the four health visiting studies to be presented for examination purposes (C.E.T.H.V. 1970).

Problems arise when concrete interventions are needed and the lack of adequate strategies becomes obvious. This absence of effective means of intervention appears clearly in An Investigation into the Principles of Health Visiting (1977). Apart from educating the population with regard to healthy life styles, the booklet has little to suggest in ways of action. However, as it will be discussed later, health education has met with little success particularly with the groups most in need, i.e., the underprivileged classes. The present study aimed at the identification of the determining factors of food consumption by primary school children in an attempt to provide health visitors and other public health nurses with concrete suggestions for interventions.

Already other disciplines have studied different facets of the eating behaviour, and some studies have come out with findings that could readily be translated into action.

CHAPTER 2

INITIAL REVIEW OF THE LITERATURE

This initial review of the literature was almost entirely done at the beginning of the project before the formulation of hypotheses. All other relevant literature will be attached to each remaining chapter. As will be found in the present chapter, some of the observations reported in Chapter 1 can be explained by previous research findings. References on the history of food consumption have been included as it was considered useful to situate the present food habits in their historical context in order to identify trends.

2.1 Some Historical Facts

In her history of Food and Drink in Great Britain from the Stone Age to Recent Times, Wilson (1973) traced the popularity of white bread in Britain as far back as the period of the Roman Empire. "To know the colour of one's bread was their (the Romans') expression for knowing one's place", wrote Wilson, "and the lowlier the place, the darker the bread" (p.233). This belief about the superiority of white bread has persisted through the centuries but during the later medieval period, only the rich could afford this refined bread. According to Wilson, the serf "quite soon began to demand the same white bread that his social superiors were eating, but it was to be several more centuries before such bread became common to all" (p.238). This movement towards white bread eventually spread from London to all parts of Britain but did not reach the Scottish lowlands before the eighteenth century. Wheaten bread could then only be bought in

Edinburgh and a few other towns of Scotland (Wilson 1973). The same author noted that "foods that carried the colour white had been held in special esteem during the Middle Ages" (p.261), and she showed how only white bread made of the finest flour was accepted for religious uses. De Garine (1971) also mentioned this association between wheat bread and religion in Europe. White bread has thus been perceived as a symbol of status and associated with high moral values for several centuries. These historical facts can partly explain the still persisting preference for white bread among the Scottish population who adopted it later than the English.

The diffusion of white sugar followed a similar pattern. Sugar had already been known to the Romans who employed it as a medicine only, and was not adopted by Europeans until it was rediscovered by the first crusaders at the end of the eleventh century and, according to Wilson (1973), "thereafter a small but ever-increasing sugar trade brought the new commodity into the countries of north-western Europe" (p.281). However, the English had already developed a sweet tooth well before sugar was introduced in Britain since they were using honey which had become plentiful and popular during the later Bronze Age (Wilson 1973). Gradually, coarse and then white refined sugar spread from London throughout Britain and from upper to lower social classes thus replacing honey. First used in small quantities as a medicine, then as a spice, it began to be offered as a gift or a reward and Wilson reported that "children were bribed with sugar-plate to learn their alphabet" (p.301).

Fresh fruits and vegetables have not enjoyed in the past such favour on the part of the religious or public authorities. They have often been associated with epidemics and Wilson (1973) found that "the

sale of fruits in the streets was forbidden in 1569, a year of pestilence, and soft fruits were again suspect during the great plague in 1665 (p.348). The consumption of fruits was then acceptable only if they were cooked and sweetened with sugar according to the same author. A change began to take place in people's attitudes to raw fruit during the eighteenth century only, when physicians began to find them useful to counter-balance the alkaline properties of meat, cheese and other "alkalescent" foods. Even then, moderation was recommended (Wilson 1973).

Shifflett (1976) reported the following taboos about fresh fruits and vegetables still held by some contemporary American women:

> Children under one year of age are not allowed to eat fresh berries or fresh corn because of the belief that hemorrhaging from the bowels will result ...
> If a woman has a strong desire to eat strawberries during her pregnancy, the baby will have reddish birthmarks the size and shape of a strawberry. ...
> Eating tomatoes during pregnancy will deform the child (p.349).

Regarding tomatoes, Wilson (1973) wrote that up until the end of the eighteenth century, they were considered dangerous and cultivated only as a curiosity. Dried fruits do not seem to have generated such negative taboos and attitudes but, according to Wilson, "poorer people ate them principally in festive pottages and pies during the twelve days of Christmas, but the rich enjoyed them ... especially on fasting days and in Lent" (p.333). So eating dried fruits was fasting for the rich but a feast for the poor!

Vegetables were apparently better accepted. However, Wood (1978) wrote:

> At one time it was commonly believed through much of Europe that potatoes caused leprosy and fevers. The Presbyterian clergy in Scotland opposed the use of potatoes for food because it could find no mention of them in the Bible (p.67).

In the light of this last statement, it is interesting to point out that fried potatoes are not called "potatoes" in Scotland but "chips". Perhaps the Scots have tried to make this vegetable religiously acceptable by altering its nature (cutting it in small pieces and deep-frying it) and by renaming it.

These few facts about the history of some foods show, among other things, that the diet of the poor has always differed from the diet of the rich; this latter group being the first to adopt new foods. According to Wilson (1973) the trend of white bread and white sugar for the rich is now being reversed and she stated that "nowadays the well-to-do cultivate slimness and choose diets rich in protein foods, fruit and vegetables, but low in starch and sugar" (p.421). As it was reported earlier, recent data support this statement. There have been attempts by sociologists to explain these discrepancies between social classes.

2.2 A Sociological Perspective

Some studies have used the theory of structural differentiation to examine the differences in life styles between social classes.

> According to this theory, wrote Beaudry-Darisme (1972), as thoughts, perceptions, and practices become more complex in one sphere of life, it would be expected that an increased complexity in thoughts, perceptions, and practices would occur in other spheres. Thus, with more education and/or income or some other increase in life complexity, one would expect the pattern of the family's food intake also to become correspondingly more complex (p.104).

The same author and her colleagues applied this theory to the study of food consumption in three areas of a Caribbean Island. They found that food consumption followed "a pattern of development which fitted into a Guttman scale, therefore dividing the population into strata of different levels of differentiation" (p.109).

They described this pattern as follows:

> ... an increased complexity into the general way of life (more education and higher occupational status of the household heads, higher level of living and house typology, more modern health practices) was significantly associated with an increased complexity of the food intake (p.113).

Chassy et al. (1967) had obtained similar results in an industrializing area of the state of New York but Sanjur and Scoma (1971) reported some inconsistent patterns in a low income population of Northern New York. In the latter study, neither the mother's education nor her occupational level followed the expected complexity continuum. However, the authors pointed out some characteristics of their "low income" families that can explain these inconsistencies:

> The families under the present study belong to a higher sub-strata within this group. A large percentage of the mothers had completed high school and also exhibited a high rate of communication patterns. The very fact that they are participating in social intervention programs sets them apart in terms of motivational forces and goals (Sanjur and Scoma 1971, p.91).

So it appears that not only can we associate certain types of food with some social classes (e.g. whole-meal bread and fresh fruits with upper classes, and white bread and confectioneries with lower classes) but we can also suspect that the upper classes have a more varied diet.

Another aspect of the social dimension of food is the role it plays in human interactions. According to De Garine (1972), "to respect food taboos, share a meal, give or accept a gift of food, are all ways of becoming integrated to a group" (p.153). Dyson-Hudson and Van Dusen (1972) conducted a study of food-sharing among 46 boys and girls aged 5 - 8 years and attending a city day camp. Activities of the children were recorded under the following categories:

> Equality interactions: holding hands, conversing, and playing together.
>
> Dominance interactions: helping, leading, teasing, quarrelling and fighting.
>
> Food exchange: offering and asking for food, with a note as to whether it was accepted or rejected (p.320).

They found that girls tended to engage in more food-sharing activities than the boys; fewer boys shared food with fewer people. Their data indicated that "the most active food sharers for both boys and girls were also the most socially aggressive, or dominant" (p.322). Food sharing was mentioned in the casual data collection both as reported by the two children interviewed, and as observed by the investigator. Not all foods are suitable for sharing though; Dyson-Hudson and Van Dusen concluded from their study that there seems to be a "hierarchy of desirability of food items, and most children know automatically whether a deal is fair or not" (p.325). Children have food preferences of their own.

2.3 Children's Food Preferences

Studies have been done to discover children's food preferences (Breckenridge 1959; Lamme and Lamme 1980; Zunich and Fults 1969). With slight differences for a few foods, they reported the same results summarized as follows by Lund (1969):

> Foods liked by children include meat, ice cream, bread and crackers, milk, raw fruits, and cereals. Highly preferred fruits are apples, bananas, and oranges, all of which are reported as preferred raw, not cooked or as juice. Vegetables, particularly cooked vegetables, are consistently children's least preferred food. White potatoes and raw tomatoes appear to be well liked by most children. In most instances, children prefer vegetables served uncooked (when possible) rather than cooked. A good example is raw versus cooked carrots. Vegetables that children consistently dislike are Brussel sprouts, squash, spinach, asparagus, turnips, cauliflower and rutabagas (p.6).

In Lamme and Lamme's study (1980), milk came far behind (14.9%) "cola or soda" beverages (39.1%), these latter being the very first choice of children. Regarding potatoes, Zunich & Fults (1969) specified that all children in their survey liked fried steak, liver, chicken, fish and potatoes but disliked these same foods if baked.

The fact that confectioneries and crisps are not mentioned in these studies might be explained by cultural differences or by the methods used to collect the data. Lamme and Lamme for example, asked their respondents "What is your favorite breakfast, ... dinner, ... vegetable, ... fruit, ... sandwich, ... beverage, ... dessert?" (p.398) This meal-oriented question is unlikely to discover the favourite foods eaten between meals which is probably the case for crisps and confectioneries. Zunich and Fults' questionnaire consisted of 124 specific foods included in the following four groups: dairy foods, meat group, vegetables and fruits, and bread and cereals. Again such an instrument could not disclose food preferences that do not fit into those groups.

Children differ from adults not only with regard to their food preferences but also in their eating styles. According to Wurtman (1978), "when a child reaches elementary school, he develops an eating style that becomes more and more independent of the influence and scrutiny of his parents" (p.9). She focused on meals and on parents' lack of awareness of what their school-age child eats at mealtime if they are not supervised. She did not define the expression "eating styles" and used it interchangeably with "pattern" or "eating habits" when referring to variables such as: with whom the child eats, where, time and frequency of food consumption, trading and sharing of foods.

Regarding the time of food consumption, Harris (1970) in his survey of breakfasts eaten by high school students discovered that "over 50% of the boys and girls said they were hungry for lunch before 11.00 a.m." (p.325). Smith (1980) reported about a school lunch programme in which the time for serving lunch was successfully changed. Concerned with food waste occurring at lunch time, the staff of a school cafeteria in California decided to reverse the traditional order of "eat first, play last" and to replace it with a lunch schedule more adapted to children's needs. They simply allowed the children to play for a period of 20 to 25 minutes before lunch. The positive results obtained show how correct their perception of children's need to play was. "Food waste," wrote Smith,"was cut immediately - the first day - and dramatically. Noontime discipline problems were reduced just as dramatically ... pupils no longer gulp and give or throw away food in order to get to the playground."

If children differ from adults in their food preferences and in their eating styles it becomes important to know the dimensions along which these differences occur.

2.4 A Psychological Perspective

In a discussion of the role of presentation on food choice, King (1980) illustrated how market researchers can develop food brands' personalities on the basis of three particularly common dimensions:

1. Natural and individualistic versus stereotyped and formal. These attributes are clearly linked with home-made versus factory-made; traditional versus modern; natural ingredients versus synthetics.

2. Serious versus fun. Linked with solid versus light; main part of meal versus addition; family versus entertaining; for

adults versus for children; health-giving, 'nutritious' versus hedonistic; basic versus luxury.

3. Simple versus complex. Linked with familiar, plain English versus fussy, messed-up foreign; colourful, tasty versus pale, bland; for children versus for adults; filling versus delicate; to some extent male versus female. (p.76)

It is interesting to re-examine King's dimensions contrasting those aspects linked with foods for adults as opposed to foods for children. Thus, simply reorganizing King's "serious versus fun" dimension, we obtain:

Foods for adults	Foods for children
serious	fun
solid	light
main part of meal	addition
family	entertaining
health-giving, nutritious	hedonistic
basic	luxury

The importance of entertainment associated with food for children comes out clearly. McKenzie (1977) argued that there is a growing division between food for nourishment and food for fun but he did not associate food for fun with children's eating. Below is a list of the distinctions he made between these two categories.

TRENDS IN FOOD PERCEPTION

Foods for nourishment	Foods for fun
Specific meals and parts of meals, e.g. breakfast, main course at dinner	Remainder of meal-snack occasions
Designated nutrient intake	No concern about nutrient value (probably better if no nutritional value)
Need for reassurance from manufacturer	Other than not harmful, no questioning of manufacturer
Intrinsic merits in kudos of product but should also taste 'OK'.	Fun to look at, nice taste, good image

(From McKenzie 1977, p.322)

These distinctions in food perception gain a practical significance if we agree with Watson's view on the eating behaviour (Watson 1980). According to this author, the eating behaviour can be seen as a sequence of behavioural components "culminating in the satisfaction of a need and producing a change of state in the person" (p.44-45). At each step of the sequence, subjective qualities of foods are thought to be measured against a criterion and if this evaluation is negative, the process is stopped. Watson called this criterion an "Internal Representation of Adequacy" and gave the following example of a sequence:

Subjective	Objective
Perception of palatability (taste, smell, texture, temperature etc.) Check against Internal Representation of Adequacy	
	Masticate food
Perception of bolus quality and quantity. Check against Internal Representation of Adequacy	
	Swallow food

(Watson 1980, p.46)

The eating behaviour is seen as one among several behaviour sequences and according to Watson,

> Behaviour sequences when they interact in this way so that perceptions, checks against internal representations, and behaviours form common elements to more than one sequence and thus play a role in satisfying more than one need simultaneously, are referred to as exhibiting Fusion. This is the essential link in understanding just how psychological factors of a non-nutritional kind can interact motivationally in the field of eating behaviour. It follows that any other motivational fusion will operate in the same way. (p.47)

According to the same author, motivations which can "fuse" with nutrition motivation are, for example, "affiliation or In Group Identity motivation", "Sexual motivation", "Maternal motivation", "Exploratory or Curiosity motivation" (Watson 1980). He does not differentiate what could be children's motivations as opposed to adults' motivations but returning to King's dimensions, it could be hypothesized that "Entertainment motivation" would be characteristic of children.

King (1980) illustrated clearly how these concepts were actually applied to the marketing of cod fish in the form of fish fingers:

> They have many appeals to (...)a young child (...) Fish fingers have no bones; they taste the same each time; they have no associations with wet, slimy, dead creatures. They come in manageable sizes, possibly with associations with the shape and size of the child's toys.
>
> Beyond that, the child's previous liking of fish fingers will have affected the mother's choice; and by giving the child a popular food that she believes to be nutritious, the mother is expressing love, caring and the stability of the home. If the child is very young, it may be a more effective way of conveying these ideas than language (p.69).

Perception of foods is possible because foods possess physical characteristics that are perceptible by the senses such as taste, smell, texture, temperature, shape, colour, or size. Church and Doughty (1976) stressed the importance of devoting more attention to these factors in any attempt to change food habits:

> The satisfaction of sensual values is very precise. These values include the right temperature, texture, consistency, proportion of liquid and solid, appearance, flavour and smell of the food. These sensual qualities, which may critically relate to whether people will, or will not, eat a food, are not easily quantifiable and are seldom part of nutrition analysis (p.10).

Pursuing the argument that there is a difference between foods for adults and foods for children, it becomes appropriate to wonder if there

could be certain tastes, smells, textures, temperatures, shapes, colours, or sizes appealing to children but not to adults and vice-versa. This kind of variables is usually associated with cultural values and beliefs.

2.5 An Anthropological Perspective

It was reported under children's preferences that children dislike vegetables, particularly cooked, but that they like fried foods. According to De Garine "some forms of cooking ... accentuate the feeling of repletion and stress the different degrees of smoothness of the various sauces served with the staple foods" (p.147). The popularity of chips, especially those sold with a brown tasty sauce on them, is a good illustration of this. Another example would be the fact, reported by Wurtman (1979), that children like Chinese food. She asked a group of teenage boys what they did with the vegetables that accompany many Chinese dishes; they replied they always eat those vegetables because "they don't taste like vegetables - they taste good" (p.181). This preference for both Chinese and fried foods came out in the interview with the eleven year old boy (Appendix I).

According to Douglas (1979) taste differences must be interpreted in the light of cultural differences in food consumption:

> Most current research on taste concentrates on individual reactions to individual items. It seeks a universal human reaction to specific qualities, such as sweetness or saltiness, and tries to screen out cultural effects as so much interference. But, according to the structural approach, the cultural controls on perception are precisely what need to be analyzed (p.44).

Douglas and Nicod (1974) applied this structural approach to the study of the English meal. Nicod found four families that accepted him as a lodger, stayed with them for at least one month and shared their meals

(meals for special occasions as well as ordinary meals). This study found that the diets of English working-class families is based upon two staple carbohydrates: potatoes and cereals. The meal moves from savory to sweet (taste), from a hot solid and a cold drink to a cold solid and a hot drink (temperature and texture), and from food in which flavour and smell dominate, with no particular shape involved, to food in which the visual pattern forms an important part of the appeal (shape, colour). Throughout this progression, there is one constant: the sweet biscuit.

The authors concluded:

> The implications of this research are more than meets the eye. For one, it uncovers a basic English system that underlies regional variations. In our case studies, fresh fruit had no place in the system whatever, unless it could be smothered in cream, and so became a trifle. So, for a middle class dietician to appear on television and tell the great British public that its mothers can cope with rising prices by simply serving an ungarnished apple, instead of pudding, is plain stupid (p.747).

Douglas' analysis is viewed as an adult's perspective by James who argued in her "Confections, Concoctions and Conceptions" (1979) that while sweets are regarded by adults as an adjunct to "real" food and should not usurp the place of meals, for the child, it is meals which disrupt the eating of sweets. Her analysis is based on observations made in a youth club of a small North Eastern English village with a population of children ranging in age from eleven to seventeen. She observed that a major focus of activity for all children was the "buying and selling of sweets, primarily of the 'Ketty' variety, although older children tend more towards other kinds of sweets" (p.85). She illustrated how the word "Ket" meaning useless article or rubbish for adults has a totally different meaning for children who use it to refer to a revered sweet.

James argued that:

> ... the true nature of the culture of childhood frequently remains hidden from adults, for the semantic cues which permit social recognition have been manipulated and disguised by children in terms of their alternative society (p.83).

According to her, children do not buy kets simply because they are cheaper but because they have:

1) "names which emphasize their inedibility and rubbishy content in adults terms"; (p.86)

2) shapes of animals "whose consumption normally is abhored by adults and which are surrounded by dietary taboos"; (p.86)

3) colours such as "the luminous blues and fluorescent oranges of the 'Fizz Bomb' and the vivid yellows and reds of many jellied 'kets'"; (p.87)

4) textures which provide "a unique digestive experience" such as the tingling sensation gained from eating 'Fizzy Bullets' 'Fizz Bombs' or 'Fruit Fizzles'; (p.87)

5) a "ferocious taste"; (p.87)

6) no wrapping: "... the layers of paper provide the necessary separation between the inner and outer body", a separation that is necessary for adults but not for children, argued James (p.89).

The same author discussed how the patterns of eating of kets are just as important to consider as their physical characteristics:

> Many are specifically designed to conflict with the adult's abhorrence of food entering the mouth by hand: 'Gob Stoppers' are removed from the mouth for comparison of colour changes and strings of chewing gum continually pulled out of the mouth (..) The frequent examination of each other's tongues during the process of eating 'kets' together with the other eating techniques required to consume them, manifest a rejection of the mannered and ordered conventions of adult society (p.90).

James' analysis surely helps to understand much of the children's eating behaviour described in the casual data collection. It has one important

limit though with regard to the problem under consideration; it is restricted to the consumption of confectioneries. Although sweets might be the top favourite foods of children, they are not the only ones bought by them. The absence of mention of crisps, chips, ice cream cones, or beverages may be due to the fact that these foods were not available in the youth club where James made her observations. The availability of food must be taken into account.

2.6 The Influence of Availability

The importance of looking at the availability of foods was mentioned in several studies. This concept is broad and can be studied in relation to seasons (Zifferblatt 1980), geographical regions (Zunich 1969), social classes (Black Report 1980; Cépède 1972; De Garine 1972; McKenzie 1980), pocket money (Wurtman 1978), and immediate environment (Breckenridge 1959; Buss 1979). Only these last three aspects will be discussed here.

Cépède (1972) pretended that as a consequence of their financial means, underprivileged groups do not have as much freedom of choice as their upper class counterpart. De Garine (1972) stated that "in urban areas, the majority of business centres are concentrated in districts where customers have a high purchasing power" (p.146). This discrepancy in the availability of certain foods between privileged and underprivileged districts was observed in Edinburgh and reported in the casual data collection.

Regarding pocket money, Wurtman (1978) observed that "many children buy snack foods at school or at a nearby store with money from an allowance" (p.11). In their 1980 annual report, Wall's Ice Cream

reported figures from the latest study by Gallup sponsored by their company. They concluded:

> While working mums and dads battled to keep pace with inflation in 1979, their offspring received a bumper tax-free overall increase in pocket money of 27 per cent (...) This brings them, at an average of 99p per head, to the brink of the magical £1-a-week mark (p.11).

The detailed figures in relation to age groups for 1980 were as below:

Age group:	5-7 years	8-10 years	11-13 years	14-16 years	Average
Money/week:	59p	66p	109p	151p	99p

(Wall's Report 1980 p.11)

Wurtman's remark and the figures above match the observations reported in Chapter 1.

Breckenridge (1959) demonstrated the influence of the availability of foods from the immediate environment on the tastes of children. In her study a group of 51 boys and girls aged $5\frac{1}{2}$ to $11\frac{1}{2}$ years, attending the Merrill-Palmer Camp in Detroit were questioned on their food attitudes at the beginning and at the end of the camp season. A comparison of the results showed that 28 children learned to like one or more foods while twelve children acquired a dislike for some foods. According to the same authors, "some learned to like a food because they became acquainted with it at camp; others preferred the way it was prepared at camp" (p.707).

The influence of the immediate environment on food choice was studied by Hruban (1977). In his survey, he used a questionnaire with 374 high school students in Indiana to study the relationship between snack foods placed in vending machines and the selection of those snacks by students. His questionnaire consisted of a list of the 31 different

types of snack foods actually located in the school's vending machines (the actual snack selection) and of a list of 21 snacks from which a student could choose if they were available in vending machines (the theoretical snack selection). In order to measure the influence of the availability on the quality of the foods selected by students, Hruban deliberately built a theoretical list including 7 "excellent" snacks, 7 "fair", and 7 "poor" while the vending machines offered an actual selection of 14 excellent snacks, 11 fair and 6 poor. Comparing the "theoretical" and "actual" selection, he obtained the following results: "280 (74.87%) students declined in their snacking score from actual to theoretical" (p.35).

Market researchers together with food producers constantly develop new strategies to improve the availability of their products. As the Wall's Report 1980 put it: "Aggressive selling pays off". "Powerful point of sale", "dominant position" for their appealing ice cream cabinet, "prominent display" literally assault the customers who "are faced by a powerful encouragement to buy impulse and take home ice cream on their way out of the store" (p.17).

An attempt was made to obtain more information from market researchers but it met with little success.

2.7 The Inaccessible Market Research

A letter was first sent to The Market Research Society explaining the aim of the project in order to obtain some information about strategies used to promote the sale of foods to children. From the list entitled "Organisations providing market research services in Great Britain", provided by the Society, the names and addresses of six

companies undertaking market research with children were found, and a letter was sent to them. Two of these companies never replied to the letter. Three answered that their research belongs to commissioning clients and is therefore strictly confidential. The last one conducts research and sells it to interested clients but at considerable costs. This company (Carrick James Market Research) enclosed a copy of their February 1981 Newsletter reporting their November 1980 survey figures about pocket money which were:

	Pocket Money	Total Money to Spend
7 - 10 year olds	62p	87p
11 - 14 year olds	£1.27	£1.99 (p.2)

Although the Newsletter does not specify it, one can assume that these are figures of weekly allowances. Considering that the age groups are not exactly identical to those used for Wall's survey, the figures are very close to Wall's. The Newsletter did not describe the distinction made between "pocket money" and "total money to spend".

Following suggestions from various sources, four other companies and the British Nutrition Foundation were also contacted. The Foundation never replied. The Manager of the Marketing Research Department of the Nestle Company Ltd. wrote that their research is primarily conducted among mothers. Wall's Ice Cream sent, free of any charge, one copy of their annual report 1980, which is mainly a description of their current products but also provides some information indicative of their marketing strategies. The fact that an ice cream company was less reluctant to disclose such information might be explained by the relative approval of their products by health professionals.

The Nielsen Marketing Research Company replied that food habits of primary school children had never been covered in their Nielsen Researcher. This company also publish the Confectionery Index but it is available to manufacturing companies only. Finally, one company appeared to be willing to help but, in a telephone conversation, one of its directors explained that the objective of the research was too broad for him to be of any help. As he put it, market research companies undertake research for very specific purposes such as finding a successful name, packaging, shape, colour, or size of packet.

At this stage, it is useful to return to the problem at the origin of this project, and to consider if and how the previous research findings reported in this chapter provide an adequate basis for action.

CHAPTER 3

CONCEPTUAL FRAMEWORK AND HYPOTHESES

3.1 Theoretical Background

As stated in Chapter 1 the problem under consideration is a lack of effective means of intervention to prevent, among primary school children, the consumption of foods detrimental to their health and to promote their consumption of recommended foods. Most of the literature reviewed in Chapter 2 reported studies whose main objective was not to discover effective strategies of intervention but rather to test a theory on the eating behaviour of human beings. As a result, this research was often unidimensional in the sense that it contributed to the understanding of one dimension (either social, economical, psychological, anthropological, etc.) of children's food consumption. The observations reported in the casual data collection indicate however that more than one theory can find its share in the reality of children's eating.

Researchers who have been preoccupied with the question of how to change food habits have soon recognized the importance of examining the behaviour from several angles at the same time. Margaret Mead (1943) as the executive secretary of the Committee on Food Habits created in the United States during World War II wrote:

> As the Committee's task was to integrate existing materials and devise new ways of tapping existing knowledge on the problem of cultural change, a primary requirement was to develop a point of view, an approach which would make systematic use of additions to knowledge in all of the fields from which research results could be expected. New information is continually

> coming out on the perishable quality of vitamins in vegetables on a steam table; or a new experiment in a rat's preference for the food which he ate less often regardless of whether it was a more or less nutritious food; or the relative palatability of different variety of the same food; or, on the other hand, on detailed studies of purchasing habits of subcultural groups, or of striking shifts in the consumption of different foods under various sorts of pressure (advertising, wartime shortages, etc.); on new experiments in the relationship between anxiety and acidity in the stomach. All of these findings have to be fitted together to provide a systematic and coherent scientific background for recommendations directed toward changing the dietary pattern of American culture. (p.20).

In spite of this early recognition of the need for a comprehensive approach to nutrition, it is only in the late sixties and early seventies that multidimensional models appeared. Lund and Burk (1969) carried out the first multidisciplinary analysis of children's food consumption and their conceptual framework included most of the variables still retained by more recent studies namely: the child's bio-psycho-sociogenic needs for food, the child's beliefs, attitudes and values relating to food, the school environment, the home and family environment, and the food availability and consumer information. Regarding this last group of variables, Lund and Burke wrote:

> A final set of variables identified as essentially supply elements also was expected to be associated with children's food consumption patterns. These variables are not included above <u>because they are essentially outside of direct child control</u>. They include primarily economic elements related to the supply, price and general availability of food in the community in which the family resides and to availability of market and consumer information.
>
> (p.27, underlining added)

It may have been true in the U.S.A. of 1969 that children had no direct control over their supply of foods but the observations at the

origin of the present project show that it is not so in Scotland now. However, the fact that Lund and Burk did include some environmental factors in their model together with a multitude of interrelated factors appears as an important step forward in nutrition surveys.

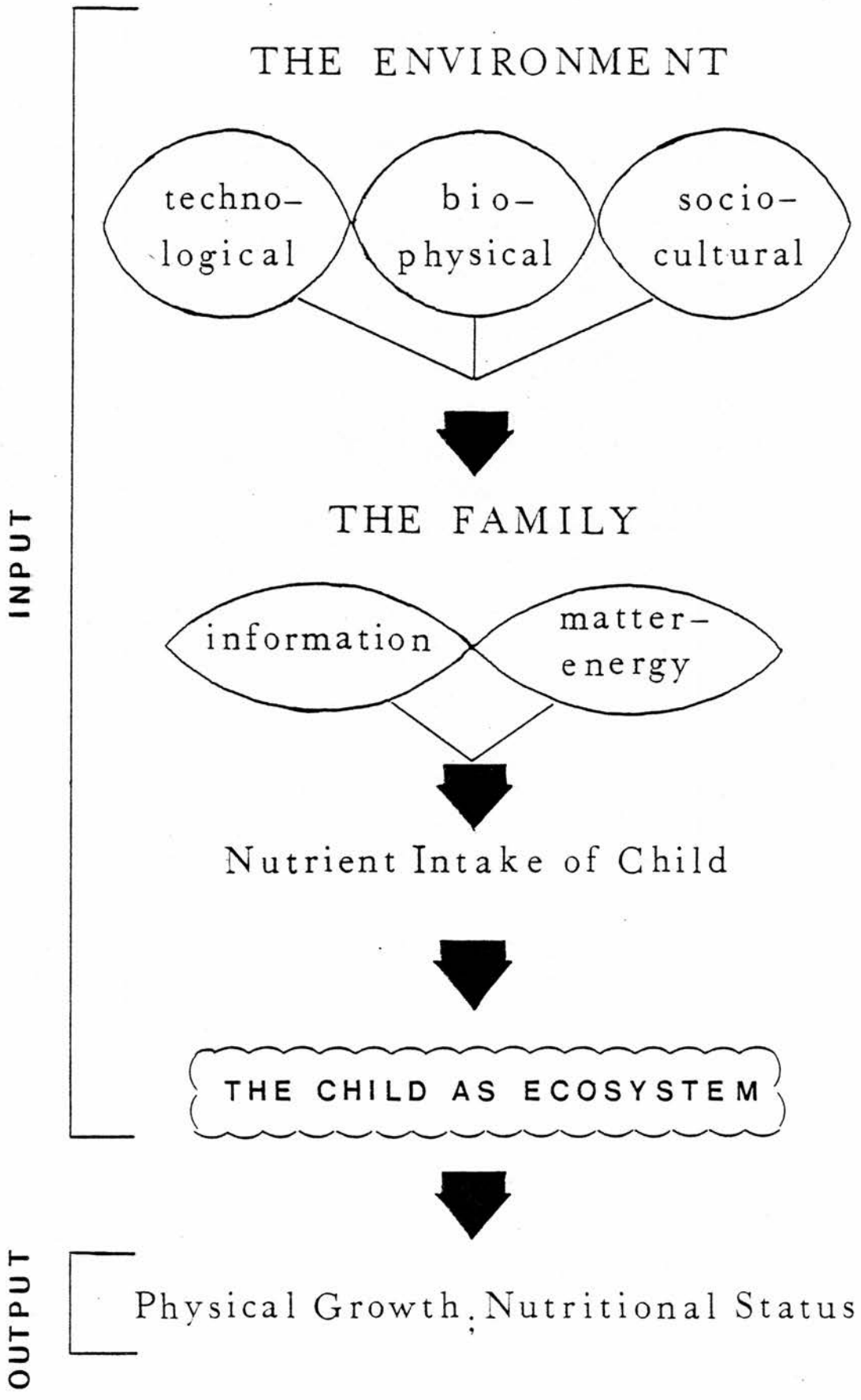
In the early seventies, probably as a result of the influence of system theory and the ecologic movement, several authors advocated an ecologic approach to nutrition and health in general. (Read 1970; Hoyman 1971; Sims et al. 1972; Knight 1976). Later in 1977 when the International Union on Anthropological and Ethnological Sciences created the Commission on the Anthropology of Food, the anthropological and ecologic approaches were considered equivalent (Douglas and Khare, 1979):

> Anthropology's approach to nutrition is ecological, treating the physiological processes, domestic processes, the local community and the macro-economy as part of a single system.
>
> (p.904)

Sims et al., (1972) developed an eco-system approach for a study of the nutritional status of pre-schoolers. Their model is illustrated in Figure 3.1.

This theoretical model was applied by the same authors to a nutritional survey of 163 pre-school children. (Sims and Morris, 1974). Their study focused on demographic data regarding the family, the mother's knowledge of nutrition, her attitudes about feeding children, the money spent for food, meal-time and food buying practices, space and housing, and psycho-social attributes of the mother. The nutrient intake of the child was measured using three 24-hour food records and a dietary history of the child was done. The assessment of the output consisted of measuring some biochemical indices and

Figure 3.1 Sims' et al. conceptual model for the study of nutritional status of children (From Sims et al. 1972, p.200).



taking some anthropometric measures. The model as well as the variables measured show that, to Sims et al., the child is a passive being whose food consumption is controlled by the environment reduced here to the family and the home. It fails to recognize the influence that the family might have on the distal environment as well as the influence the child might have on his (her) family. In fact, as described and illustrated, this model is more linear than ecosystemic. The strong emphasis put on the family can be explained, but not completely justified, by the fact that the model was developed to study the nutritional status of the pre-schooler. As a consequence of that approach, the distal environment has no direct influence on the child (everything is filtered through the family) and the authors ignored such environmental factors as the availability of foods (apart from the foods provided by the mother), peers' influence, advertising or physical characteristics of foods. The patterns of eating of the child were not examined - except within meal-time practices. Sims has maintained basically this same model in more recent publications (Sims and Wright 1978; Sims 1981).

Pointing out the unidirectionality of the process in Sims' model, Caliendo et al. (1977) in a similar study included the following pre-schoolers' characteristics: age, sex, ordinal position, food preferences, and responsiveness to the eating situation. However, their emphasis was put on the psycho-social characteristics of the mother and family resources as they surveyed pre-school aged children.

As far as can be seen from the literature published, multi-

disciplinary and ecosystem models have been used in surveys of pre-school children's nutrition only. This can be explained by the fact that the variables impinging upon the nutrition of the pre-school child can be more easily isolated and measured than the variables affecting older children and adults. If the target group is primary school children, the same model becomes inadequate because, as it was mentioned earlier, it does not include such variables as peers' influence, advertising, availability of foods in the environment, patterns of eating (not restricted to meal-time practices), or the physical characteristics of foods. Both the observations already reported and the literature review give reason to suspect that these variables play a role in children's eating.

3.2 A Model Adapted to School Children

To encompass all the variables suspected to influence school children's food consumption, three broad concepts were thought necessary, namely, the environment, the consumer of foods with bio-psychological and sociocultural characteristics, and the interactions between environment and consumer. Sims' model integrates two of these three concepts i.e. the consumer and the environment (limited to the child's family). This latter concept needed to be expanded in a study of school children as their environment goes obviously beyond the home boundaries. Also, according to Sims, all the matter-energy organized by information flows from the environment to the child through the family but neither the child nor the family are shown to have any influence on the environment. Thus her model does not incorporate the concept of feedback from

the consumer to the environment which is essential to a system approach. (Chin, 1976a)

Figure 3.2 illustrates the model as modified to take these new concepts into account. The elements suggested by Sims et al., (1972) have been retained. These are:

1. Distal environment composed of the biophysical system (physical and biological components of the environment), the psychosocial system (social, cultural and economic features of human existence; interpersonal relationships expressed by individual or collective patterns of behaviour) and the technological system (materials, tools, techniques).

2. Matter and energy organized by information, produced by the bio-physical, socio-cultural and technological systems.

3. Family of the child. According to Sims et al., factors to be included here are: demographic description of the family setting, availability and use of resources, and psychosocial attributes of the mother.

4. Nutrient intake of the child or dietary evaluation.

5. Physical growth and nutritional status.

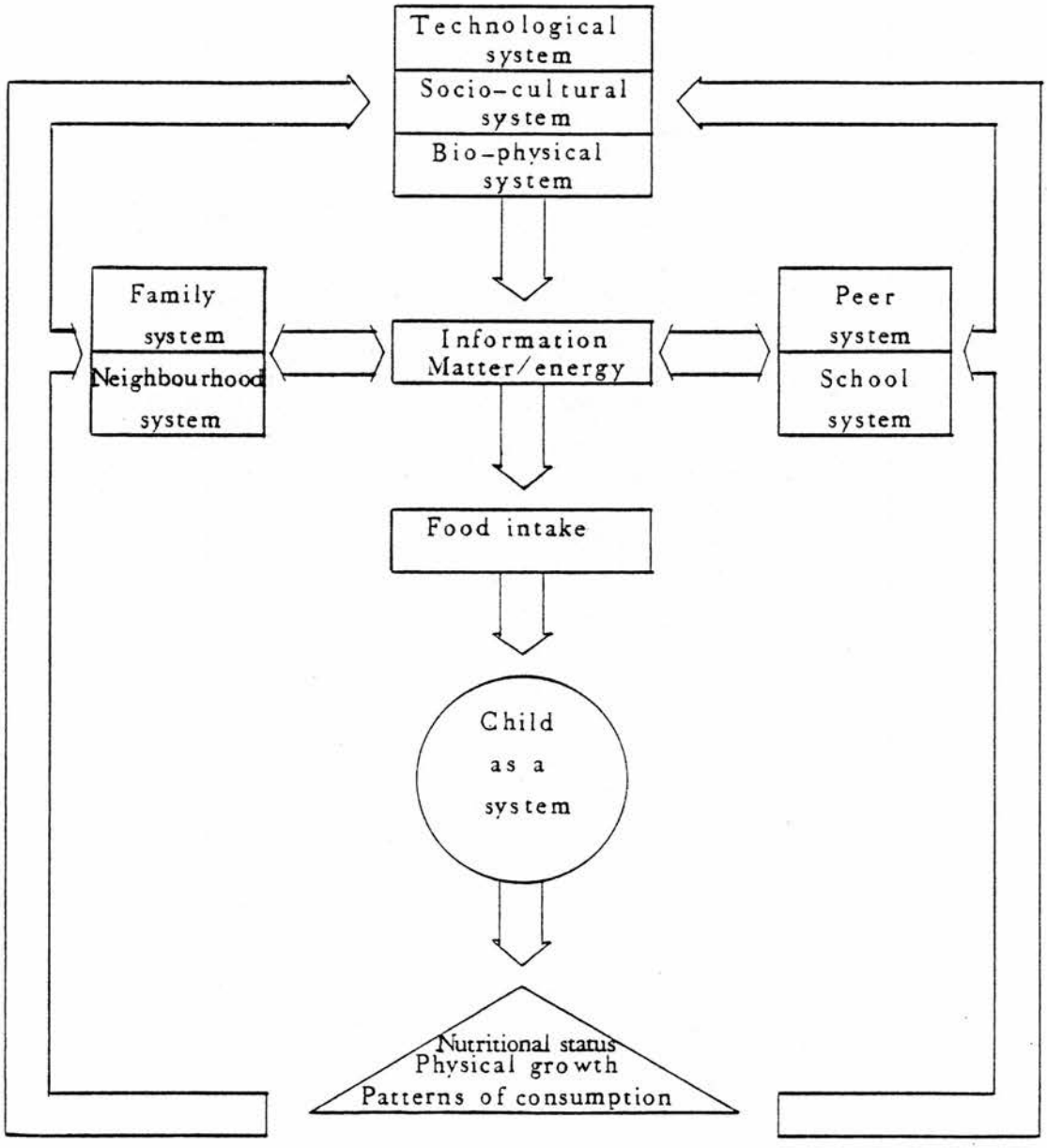
Four new elements have been added; these are:

1. Peer system. Combination of influences coming from the child's peers, either individually or collectively.

2. School system. Combination of influences resulting from the attendance of a particular school and its immediate environment.

3. Neighbourhood system. Combination of influences resulting from the immediate environment of a child's home.

Figure 3.2 A conceptual model for the study of nutritional status of children (Adapted from Sims et al., 1972)



4. Patterns of food consumption. Ways of gathering and consuming foods including money spent on food, preferences for certain shops, frequency and time of food consumption, setting, etc.

In this adapted model, the child is not seen as an ecosystem but rather as a system influencing as much as being influenced by the environment through a set of other systems themselves interacting with each other. Chin (1976b) calls macro-system or ecosystem a group of small living systems interacting within and with an environment. The elements described above and the nature of their interconnections match this definition of ecosystem. The important feature of the modified model is the active role that the child and his (her) immediate environment play in it. This dimension has been neglected in previous studies. Also, other studies documented how variables and sets of variables influence some aspects of children's food consumption but one never gets an overall "live" picture of children's eating.

3.3 The Need for a Children's Perspective

Perhaps the most fundamental critique that needs to be addressed to previous studies of children's nutrition is their failure to present food consumption from the child's perspective. Apart from James' analysis, very little attempt has been made to discover what children value in foods and eating. Her study is presented as a contribution to the understanding of the culture of childhood.

This concept of a culture of childhood has emerged in the past few decades in an attempt to rehabilitate the system of values of children in the eyes of adults. (Hardman, 1973). At the same

time a new school of psychologists, taking some distance from Piaget's work, began to argue that adults have underestimated the rational powers of young children. (Donaldson, 1978). In line with these ideas, the present project was developed around the thesis that the dynamic interactions illustrated in the model presented earlier result in and maintain a set of life experiences and values related to eating that contribute to a culture of childhood. These must be taken into consideration in any attempt to modify their food habits.

In discussing approaches similar to the ecosystem model advocated here, Chin (1976b) stated:

> Three fundamental approaches to changing the relationships of a system to its environment are possible: 1) change the properties of the environment of the system; 2) change the interrelationship of the system to the environment; and 3) change either the internal characteristics of the system such as its awareness, perceptions and images of the environment, or its internal responsiveness to the changing environment.
>
> (p.110)

Most strategies of intervention in community health nursing fit into the third approach described above, i.e. focusing on the individual, trying to convince people to improve their health habits. Nutrition education is one example of this type of approach but it has met with little success. This failure can be explained by the fact that nutrition education is often not supported by similar efforts within the first two approaches suggested by Chin, i.e. focus on the environment and on the interrelationship of the system to the environment.

With regard to the consumption of foods by primary school children the number of variables from the environment and generated by the interactions between systems is so large that choices needed to be made, particularly as the research was carried out by one individual within the context of postgraduate studies. Therefore, the present study addressed itself to the following groups of variables:

1. Physical characteristics of foods.

2. Social class. Attendance at particular schools (private schools versus schools located in a depressed area) was taken as a rough guide to distinguish between underprivileged and relatively privileged children. It is acknowledged that some of the pupils in the private schools may have social class IV or V origin.

3. Eating performed in the presence of adults and eating taking place in their absence. The assumption underlying this latter contrast is that the eating behaviour is part of a culture of childhood and, if such a culture exists, one should be able to distinguish children's eating from adults' eating.

4. Availability of food in the school environment. It is recognised that the arbitrary choice of a certain radius around the school may not be relevant to children who are brought to school by car.

5. Patterns of consumption. In the model (p. 42) these are seen as part of the output because they result from the combined forces acting upon the child. It is mostly through their patterns of consumption (time and frequency of eating, sorts of foods consumed, shops sponsored, money spent) that children can influence the other systems. The concept of feedback inherent to an ecosystem approach is thus embodied in the research design.

3.4 Research Objective and Hypotheses

3.4.1 Research objective

The objective of this project was to identify the determining factors of food consumption among primary school children in the perspective of eventually using the findings to develop preventive strategies in children's nutrition.

3.4.2 Hypotheses

On the basis of the literature review and the conceptual framework described previously, the following hypotheses were formulated.

1. The availability of foods in their school environment influences the food consumption of primary school children.
2. Social class of primary school children influences their food consumption.
3. The patterns of eating of primary school children differ depending on whether they eat alone, with their peers, or in the company of adults.
4. The characteristics of the foods that children eat alone or in their peers' company differ from the characteristics of the foods they eat in adults' company.
5. Presented with a series of photographed foods, children tend to choose the items visually more appealing regardless of their nature.

3.4.3 Definition of terms

Following are the operational definitions of the key terms appearing in the hypothesis formulated above.

Availability. Series of conditions determining the accessibility of foods to a child: weekly money allowance, number and kind of food shops, business hours of shops, and whether it is a school-day or a holiday.

Foods. All edible substances apart from prescribed medications.

School environment. The geographical area comprised within a one-quarter-of-a-mile radius around the school main entrance.

Influence. The fact of being statistically related to a variable or a set of variables. Correlations with a probability level of more than .05 will be considered non-significant.

Food consumption. Act of drinking or eating food as reported by the child.

Primary school children. Children attending primary schools from grade 1 to grade 7 inclusive.

Social class. According to Warwick and Lininger (1975)

> The concept of social class, to begin with, is subject to many definitions in sociology and political science. But even if one clear definition were available, it is unlikely that any single empirical condition would serve as an adequate index of social class. Under these conditions, it may be advisable to use 'proxy variables' in stratification, i.e. variables which are closely associated with the preferred stratifying variable and on which information is available beforehand.
>
> (p.97)

In the present study, no attempt was made to obtain a sample including the whole range of social classes. Rather, it was thought more important to contrast extremes i.e. relatively privileged versus underprivileged children. The fact of attending a private school as opposed to attending a school located in a depressed area was thus

used as an indicator of belonging to a relatively privileged class versus an underprivileged one.

Patterns of eating. Set of variables related to food consumption in a repetitive manner. The variables retained here were: use of dish or utensil, company, setting, time and frequency of consumption.

Peer. Sibling, school mate or friend of similar age group.

Adult. Person of a much older age group than primary school age such as a parent, an older relative, a teacher or any person aged 18 years or older.

Characteristics. Physical qualities of foods that can be perceived by the senses. The variables retained here were: taste, texture, temperature, shape, size, and visual aspect.

CHAPTER 4

MEASUREMENT METHODS AND SAMPLE

The paucity of previous research on the topic and the nature of the hypotheses formulated both called for an exploratory study. In the present chapter the variables relevant to each of the five hypotheses are listed. A description of the methods and instruments used to measure these variables follows together with a discussion of their validity and reliability. This excludes the ethnographic interviews. Because these interviews constitute a totally different methodology based upon a specific theoretical framework, it was decided to describe them separately in Chapter 7 which constitutes an ethnography of children's eating.

A description of the sampling method follows the discussion of methods and instruments.

4.1 Variables Measured

Following is the list of the variables measured in relation to each hypothesis. They have been grouped into dimensions and sub-divided into categories.

4.1.1 Variables in relation to hypothesis no. 1

Dimension	Variables	Categories
Availability	Weekly money allowance	None 1 - 39 pence 40 - 69 pence 70 - 99 pence £1.00 - £1.29 £1.30 - £1.59 More than £1.59

Dimension	Variables	Categories
Availability	Number of shops selling food in the school environment.	Number of shops.
	Type of food shops	Fruit shop Bakery Butcher/Fishmonger Grocery/Supermarket C.T.N./Tuck Shop Take-away/chip shop Whole Food store Pub Restaurant Other
	Business hours of food shops	Open before, during, and after school hours Open during school hours Open after school hours only.
	Day of consumption	Schoolday Sunday or holiday

4.1.2 Variable in relation to hypothesis no. 2

Dimension	Variables	Categories
Socio-economic	Type of school attended	Private School located in a depressed area

4.1.3 Variables in relation to hypothesis no. 3

Dimension	Variables	Categories
Patterns of eating	Frequency of food consumption	Number of episodes of eating in 24 hours.
	Time of consumption	Before or at breakfast time Morning (from breakfast to lunch)

Dimension	Variables	Categories
		Lunchtime
		Between lunch and dinner
		Dinner time
		Between dinner and bedtime
		Bedtime
Patterns of eating	Setting	Home
		Street, bus, school ground
		School buildings
		Home other than child's
		Other setting
	Use of dish(es) or utensil(s)	No use
		Use of dish(es) or container(s)(including flask, paper cups and paper plates) but excluding packages, bottles and cans.
		Use of utensil(s) only
		Use of dish(es) and utensil(s)
	Company	No company
		With peers only
		With adults only
		With peer(s) and adult(s)

4.1.4 Variables in relation to hypothesis No. 4

Dimension	Variables	Categories
Characteristics of foods	Taste	Sweet (other than mint, fruity, chocolate)
		Savoury
		Mint
		Fruity
		Chocolate
		Salt and vinegar
		Other (bland, sour, nutty, etc....)

Dimension	Variables	Categories
Characteristics of foods	Texture	Liquid Semi-liquid Soft Chewy Hard Effervescent (including fizzy drinks) Crispy (including crunchy, crumbly)
	Temperature	Hot or warm Room temperature Cold Frozen
	Shape of food portion or of container if liquid/semi-liquid	Shapeless Cubiform, square or rectangular flat Long cylinder or rectangle Spherical or disc-shaped Animal, human, monster Carton Bottle or can Other (bowl, glass, cup, cone etc...)
	Size of food portion	Packet (dry items), 12 ounces or less for liquid items. Mouthful or smaller Bigger than mouthful
	Visual aspect	Natural Unwrapped appealing to adults Unwrapped appealing to children Wrapped appealing to adults Wrapped appealing to children

In order to discriminate visual aspects of wrappers appealing to adults from those appealing to children, the following criteria were developed on the basis of James' ideas (1979).

Appealing to adults	Appealing to children
1. Not only are the ingredients written on the wrapper but the proportion of each is mentioned.	1. The list of ingredients does not appear on the wrapper or, if so, the quantities or proportions are not stated.
2. Colours are neutral, food-like, or yellow, brown, orange.	2. Colours are primary, bright and combined (3 or 4 different colours).
3. The wrapper illustrates the product wrapped in a close-to-original manner.	3. The wrapper provides entertainment (story, cartoon, illustration of animal, monster etc.)
4. The name refers to the product, is descriptive of it.	4. The name is not descriptive of the product, i.e. is not related to its nature.
5. Has a statement giving some logical reason(s) to buy the product.	5. The reasons stated to buy the product appeal to fantasy and are not logical.

4.1.5 Variables in relation to hypothesis No. 5

This hypothesis was formulated as a complement to hypothesis No. 4 and focuses on one of the variables of physical characteristics, namely the "visual aspect" of foods as it was defined above.

4.1.6 Variables related to all hypotheses

Three more variables relevant to all hypotheses were also recorded: sex, age and the nature of food items. This last variable had no pre-determined categories.

4.2 Measurement Methods and Instruments

Four methods of data collection were used in this study: observing, interviewing, a game of pretend, and ethnographic interviews.

4.2.1 Observing

This method was used in two different ways for two different purposes.

4.2.1.1 Observing as an ethnographic method.

The observations reported in Chapter 1 indicate that observing was used from the very beginning of the project. The purpose was to collect as much information as possible relevant to children's eating. These observations were recorded and completed with a collection of photographs, newspaper cuts, and actual food items to constitute an ethnographic record.

4.2.1.2 Inventory of shops.

In order to measure the effect of availability on food consumption, an inventory of the number and types of food shops located in the environment of each school was done. School environment was defined in Chapter 3 as the geographical area included within a one-quarter-of-a-mile radius around the school main entrance. To determine this area, copies of Ordnance Survey 1:2500 maps were obtained for each school chosen. These maps provide door numbers and outlines of individual buildings and were therefore sufficiently precise to identify in the field the exact physical boundaries of a pre-determined area. Using an ordinary compass set at an angle

corresponding to a one-quarter-of-a-mile distance on the map, the perimeter of the area could easily be traced. The main entrance of the school building was the central point of this area; it was important to use this same criterion consistently as the four schools and their grounds are unequally large and spread. These maps were constantly referred to throughout the inventory to make sure that no commercial establishment would be missed. The purpose of this inventory was to collect data on the number and types of shops, and their business hours.

For each establishment selling food, the identification of the type of shop was recorded as it appeared with the name of the shop itself. With the permission of the owner or manager, the shop was examined with regard to the types of foods sold (milk and milk products, meat and alternatives, bread and cereals, fruit and vegetables, confectionery, etc.,) and the relative importance of each type. This examination provided additional information to classify the shop in one of the categories of the variable "type". The business hours were recorded as advertised or, if missing, as reported by the owner or manager. This inventory was completed during the one-week mid-term break i.e. approximately in the middle of the data collection period.

4.2.1.2.1 Validity and reliability of the inventory of shops.

Asking whether an inventory was a valid method or not to identify food shops is like asking whether it was possible through direct observation of an area to distinguish food shops from any other building. The answer is obviously yes.

What is not so obvious however is whether the arbitrarily chosen size of the area (all territory within a one-quarter-of-a-mile radius around the school) actually corresponded to what can be identified as the geographical school environment. When collecting data in the field, the investigator realized that one-quarter-of-a-mile is about twice as long as the distance almost all children walked from home to school. It turned out therefore to be a very safe limit in the case of children who walk to school. For those who commute by bus or by car, the school environment is likely to be even smaller as the child would either be left and picked up very near the school entrance or walk up to the nearest bus stop, a distance much shorter than one quarter of a mile.

The reliability of this method will be discussed in relation to three aspects: a) the map and determination of the perimeter, b) the covering of the area, and c) the categorization of shops. The Ordnance Survey maps used, illustrate the ground outline of the school buildings and make it possible to identify the main entrance of the school when a main entrance can clearly be identified in the actual school. Some schools have several entrances that appear to be equally used and it must be realized that a difference of a few milimeters in the position of the centre will have a substantial effect on the determination of the perimeter in the field. Therefore, this method is subject to some degree of unreliability resulting in the inclusion of more or less shops during the inventory depending on how the perimeter has been traced on the map. The area within that perimeter can be covered easily by an adult walking at a normal pace during one day. The systematic covering of the area

depends entirely on the person who does the inventory and who must make sure that no street will be forgotten.

The categorization of shops into one of the categories listed earlier presents some reliability problems too, particularly the two categories "grocery/supermarket" and "C.T.N./tuck shop" because some shops are a combination of grocery store and C.T.N. (Confectionery-Tobacconist-Newsagent).

4.2.2 Interviewing

Two kinds of interviews were done in this research: ethnographic interviews which will be covered in Chapter 7 and the 24-hour-recall interviews.

4.2.2.1 The 24-hour-recall interviews.

The list of variables to be measured and the conceptual framework behind it were calling for information about all kinds of foods consumed anywhere, and at any time of the day by children aged approximately five to eleven years. As it was pointed out in the previous chapters, a good deal of these children's eating is done without the awareness of their parents or teachers. Recent nutrition surveys have used a one-week weighed diet record supervised by either a trained field worker or a team of dietitians. (Cook et al., 1973; Durnin et al., 1974). The record is kept by the mother or caretaker for foods consumed at home, and by the field worker or dietitian for the school meal. In their on-going nutrition survey, Professor Durnin and his team have added a further sophistication to this method by asking the child to save and give to the field supervisor the wrappers of all the foods eaten between meals and outside

their home. (Durnin and Forest, 1982). This rigorous method of measuring food intake is often replaced by a less time-consuming one: the 24-hour-recall done for either one or several days.

Because the focus of the present research was not on the nutrient intake of the respondents but rather on more qualitative aspects of their food consumption, it was considered that one 24-hour-recall obtained from the child would provide satisfactory information. A 24-hour-recall interview schedule was developed and pre-tested by the investigator among a total of fourteen children, one from each of the seven grades of primary school, in one private school and one school located in a depressed area. The final interview schedule appears in Appendix III. Interviewing children under six years of age as a means of data collection is often questioned. Yarrow (1960) concluded a discussion of this issue by saying:

> By 4, children's speech is not only more easily understood but there is a great change in the function of language. Between 4 and 5, children become much more interested in exchanging information, in describing events in their experiences, and, in a way conscious, in directing activities of others (---) On the whole, research evidence suggests that the direct interview can be used effectively with 4-year olds.
>
> (p.564)

Two professional female interviewers with several years of experience in market research shared the interviewing with the investigator. All interviews to be done were distributed among them so that each interviewer went into all participating schools. Appendix IV describes how the interview was carried out. It consisted basically in asking the child: "What have you been eating yesterday from the moment you woke up until you went to sleep?"

Probing was used to facilitate the recall. All interviews took place during school hours within the school in a room allocated by the authorities for the study. They were completed over a period of two months: October and November 1981.

4.2.2.1.1 Validity and reliability of the 24-hour-recall.

The validity and reliability of the 24-hour-recall have been questioned and several studies have been undertaken among respondents of various age groups to verify the adequacy of their recall. Emmons and Hayes (1973) presented a review of these studies and their own measure of accuracy of the 24-hour-recall is the only one to have been done among children of an age group similar to the age of the population retained for the present study. They have compared the 24-hour recalls on four consecutive days of 431 children aged from six to twelve years with their mother's recalls and with a record of the lunch they had actually eaten at school. They found that:

> The ability to recall correctly a school lunch known to have been eaten improved with age from Grade 1 to Grade 4, with children in Grade 1 remembering an average of 60.5 per cent of the foods and children in Grade 4 an average of 80.6 per cent. (---) There were more significant correlations between the nutritive levels from the child's recall of lunch and the lunch actually eaten than between the nutritive levels calculated from the mother's and child's recalls of the child's diet. This was increasingly true for children from Grade 1 to 4.
>
> (p.415)

In the present study, it was possible to compare the information reported by the child with a description of the school lunch actually offered for a total of 22 respondents aged four to five

through to eleven years. The lunch recalled and the lunch offered were coded separately and the percentage of items for which there was code agreement between the child's report and the foods offered was determined. Table 4.1 presents the findings.

Table 4.1 Percentage of agreement between the child's report of the school lunch and the lunch actually offered for the variables of characteristics and the nature of each item. (Based on 79 food items reported by 22 respondents).

VARIABLES MEASURED	Nature of food item	Taste	Texture	Temperature	Shape	Size	Visual aspect
% of Agreement N = 79	84.8	86.0	86.0	88.6	88.6	88.6	88.6

Several factors can explain the difference between the higher percentage of agreement obtained here and Emmons and Hayes' percentages. The figures presented in Table 4.1 come from 22 respondents of whom only three were six years old or younger and, as the percentages of agreement are averages for the 22 children, this better accuracy might simply be due to a larger proportion of older children than in Emmons and Hayes' study. These authors reported their findings grouping children by grade rather than by age. Although they wrote that their respondents "ranged in age from six to twelve years and were in Grades 1 through 4", it is likely that the number of children aged eleven and twelve was small even in Grade 4. (p.410). Emmons and Hayes' children were choosing their lunch items from a range of foods in a cafeteria setting whereas in the present study respondents had a set school dinner with no possibility for choice. Presumably,

it is easier to remember food items when everybody else around was eating the same than if everyone had a slightly different meal. Also, Emmons and Hayes measured the recall of the food items consumed whereas Table 4.1 reports the percentage of agreement between two sets of coded data and for the variable "nature of foods" large categories were used thus resulting in the elimination of some degree of inaccuracy. Finally, differences in accuracy of recalls may be due to the interviewing technique, not described in Emmons and Hayes' paper.

To increase the reliability of and between interviewers, the investigator organized, before the data collection, a one-day training session during which the objective of the project and the purpose of the interview were explained to the two interviewers. The latter were also provided with a copy of the "Guide for the use of the interview schedule" (Appendix IV) and a list of the variables and categories as described at the beginning of this chapter. This list was meant to serve as a reminder of how specific the child had to be in his/her description of the foods rather than as a tool to code the information on the spot. This training session included the simulation of interviews and use of the game of pretend.

The investigator has met with the two interviewers once a week for the duration of the data collection. Each week, the completed interview schedules were examined prior to the meeting for completeness, clarity and consistency of information and any problem was discussed with the interviewers. These meetings also served the purpose of coordinating the work of the interviewers as the facilities available in the schools did not allow for the presence of more than

one interviewer at a time.

It must be pointed out here that if the 24-hour-recall interview schedule was a relatively valid instrument to gather data on such variables as age, nature of foods eaten, time, or setting, its validity becomes questionable as an instrument to measure the taste, texture, temperature or other physical characteristics of the foods reported. Research in this dimension of food consumption is usually referred to as "flavour" measurement. The concept "flavour" was defined by Norgren (1977) as "a sensory amalgam resulting from the odour, taste, temperature, texture, and consistency of a food or fluid." (p.91). A team at the Arthur D. Little Inc. Company has developed a technique called "Flavour Profile" measurement. (Cairncross, 1977). A Flavour Profile is based on the work of a four-to-six-member flavour panel who use a set of words that describe how a particular substance tastes and smells. Cairncross explained the procedure as follows:

> Intensive panel training is required for reproducible profile analyses. The panel's work is done on a schedule in a quiet, well-lighted, odour-free area. Plates and utensils are clean and odour-free. Panelists examine their samples in the same way (the same number of sniffs for aroma, the same number and size of bites or sips for flavour), at the same time, and at the precise temperature selected for the product being tested, because flavour properties are different at different temperatures. All panel members communicate their flavour sensations in writing, using the same descriptive terms.
>
> (p.5.)

Miller (1977) reported an application of this method to the assessment of a fluid milk product pointing out the advantages of the method for the statistical treatment of the data. Applying the

Gestalt psychologists' approach to flavour measurement, Walsh (1977) suggested ways of improving the standard analytical approach advocated by Cairncross. He argued that as flavours have perceptual properties that can be detected analytically, they also have integrative properties that could best be perceived by panelists working together to determine a Flavour Profile.

It can easily be appreciated that the objective of Flavour Profile measurement is very different from the objective pursued in the present research. As it would have been impossible to measure objectively the characteristics of foods eaten the day before by a large number of children, a subjective measurement was considered acceptable. Therefore, the food items reported by the respondents were simply coded by the investigator on the basis of her own subjective experience with these foods.

4.2.3 Game of Pretend

As this instrument was developed specifically to test Hypothesis no. 5, it is useful to re-state this hypothesis here: Presented with a series of photographed foods, children tend to choose the items visually more appealing regardless of their nature. This hypothesis originated from the observation that foods that are popular among children are often visually appealing to them whereas unpopular foods are usually dull looking. Thus the nature of foods refers to their popularity vs. unpopularity dimension.

The idea behind this hypothesis was to check whether or not the selection of unpopular foods could be increased by improving their visual aspect. As in reality unpopular foods must compete

with popular ones, it was decided to try to reproduce this dimension of competition between foods. To correct the situation of often unfair competition on the market between popular and unpopular foods, two precautions were taken: a) there was an equal number of foods in each category and b) popular foods were presented in an unappealing form as well as in their commercial appealing packaging.

As formulated, this hypothesis was calling for the use of photographs. Pictures are often utilized in research with young children and Yarrow (1960) summarized the advantages of this method:

> A valuable adaptation of the conventional interview for children under 4 years of age is the picture-choice technique, in which the problem is defined verbally and the only response required of the child is a choice among a series of pictures (---). It is a technique that continues to be interesting to children into adolescence.
>
> (p.565)

It was decided to use four food items thought to be popular among children and four unpopular items. Each item was photographed in a visually appealing and in an un-appealing form resulting in a total of sixteen pictures to select from.

These sixteen photographs illustrated the following foods:

1. Popular foods in their original appealing form
   - 1.1 A can of Coca-Cola
   - 1.2 A cylinder-shaped packet of Smarties
   - 1.3 A packet of Monster Munch crisps
   - 1.4 An orange drink in a transparent monster-shaped container.
2. Same popular foods in a dull packaging

2.1 A transparent 12-ounce-jar of Coca-Cola unlabeled

2.2 Dark brown Smarties in a transparent plastic bag.

2.3 Crisps in a transparent plastic bag.

2.4 A Cockburn Farm Dairy small carton of orange drink.

3. Unpopular foods in an appealing form.

3.1 Pure orange juice in a small transparent "squizzy" bottle.

3.2 A slice of fresh pineapple stuck onto a stick to make it look like a lollipop.

3.3 A packet featuring a Superman-like hero picking walnuts and dates from a weird-looking tree.

3.4 Strawberry flavoured milk in a small monster-shaped transparent container.

4. Same unpopular foods in their original form.

4.1 Pure orange juice in a small carton of Just Juice.

4.2 Pineapple chunks in a small white bowl with a spoon.

4.3 A small packet of walnuts and dates in a transparent plastic bag.

4.4 A small carton of Scottish Pride Strawberry milk drink.

Each item was photographed by a professional photographer who placed it against a neutrally coloured background making sure that each food would occupy approximately the same surface on the final print. The processing, developing and printing were done by a professional photo-laboratory. Each print was three by four inches in size and was subsequently fixed on a three-by-five-inch card allowing space to print the identification of the item at the bottom of the print.

Appendix V describes how these photographs were used with the respondents, and Figure 4.1 reproduces the actual photographs and their display.

Figure 4.1 Series of photographs used as displayed to measure the effect of the visual aspect of foods on their being selected.

This display is schematized in Figure 4.2 with regard to the visual appeal and popularity of the items.

Figure 4.2 Schema of the display of the photographs with regard to the visual appeal and the popularity of the items.

(P.A.)	(P.U.)	(U.U.)	(U.A.)
(U.U.)	(P.A.)	(U.A.)	(P.U.)
(P.U.)	(U.A.)	(P.A.)	(U.U.)
(U.A.)	(U.U.)	(P.U.)	(P.A.)

P.A. = popular appealing; P.U. = popular unappealing;

U.U. = unpopular unappealing; U.A. = unpopular appealing.

As indicated in Appendix V, this data collection instrument was presented to the child as "a sort of game". According to Portele (1975), games possess to a greater or lesser extent the following dimensions: a) motivation, b) direction or power, c) rules, d) "as-if" character (considered an essential dimension), e) concreteness and f) intrinsic or extrinsic interactions motivation. The series of photographs and the way of using them can be said to possess the dimensions of "rules", "as-if" character and "concreteness". In fact very early in the data collection period, children began to refer to it spontaneously as the "shopping-game".

The participating child was asked to buy five foods, then three, and finally only one. This strategy was an attempt to simulate the reality of many children who get a weekly money allowance and may feel "rich" when they get it. The early observations reported in Chapter I indicated that when children have a relatively large amount of money, they tend to spend a big proportion of it in one purchasing episode and, subsequently, they spend less and less each

time until they have no money left. Admittedly though, children rarely buy five foods in one purchase but the advantage of requesting children to buy five items in the first instance was to allow them to choose at least one unpopular food in addition to each of the popular ones. However, as stated in the "Guide for the use of the cards" the child did not have to buy different foods so that he/she could avoid buying unpopular foods if desired. This had been stressed to the interviewers whose attention had been called on this specific detail of the instructions.

This game of pretend was pre-tested together with the interview schedule with the same respondents as it was introduced immediately at the end of the 24-hour-recall interview.

4.2.3.1 Validity and reliability of the game of pretend.

The main question to be addressed regarding validity is whether or not the items meant to be visually appealing to children were appealing to them, and whether or not those meant to be unappealing were perceived as such. Lack of time and financial resources prevented the investigator from exploring with a sample of children various visual presentations of unpopular foods in order to discover the most appealing ones. Products unavailable as such on the market had to be created with limited means. This resulted in the use of two forms of presentation which are questionably appealing: the pineapple slice made into a lollypop and the bottle of pure orange juice. One can argue that the brightly coloured carton of Just Juice probably appeared more appealing to children although it was used here as the relatively unappealing form. As for the pineapple slice, it must be examined together with its counter-part: the dish of pine-

apple chunks. It seems reasonable to believe that the lollypop would be more appealing to children than the dish. The strawberry milk drink in the monster container can safely be considered more appealing than its carton counterpart. As for the Superman pack of walnuts and dates, it is undoubtedly beating the dull packet available on the market.

The appealing qualities of the popular items chosen need not be emphasized. It was not difficult to deprive them of this advantage. It was probably a mistake, however, to use a commercial carton of orange drink as the unappealing counter-part of the monster orange drink.

Previous exposure to the foods used also introduced a problem of validity as, undoubtedly the child could not completely dissociate his/her past experience with a food from a photograph of this food. In that respect, the unpopular products were starting loosers as most children are less exposed to them than they are to the popular ones. In the same line, popular items could be advantaged by their being advertised much more than the unpopular ones.

An attempt was made to control for additional possible biases such as flavour and texture. Thus to oppose the popular orange drink in the monster container, pure orange juice was chosen rather than apple juice or any other flavour. To counter-balance the choice of two popular drinks (Coca-Cola and the orange drink) two of the unpopular foods were also liquid (milk and orange juice). Walnuts and dates were chosen for their similarity in texture with crisps but also because they could be presented into a packet. Finally, in the display the popular-appealing foods were crossing the

unpopular-appealing ones in an "X" shape in order to avoid a bias due to the position of the foods in relation to each other.

Several factors contributed to the reliability of this instrument. The same pictures were used by all three interviewers and they were of equal quality. Each print was numbered from 1 to 16 thus making it easier to lay out the sixteen pictures according to the prescribed pattern. The recording of the findings was simple and objective as all the interviewer had to do was to write on the back of the interview schedule the number of the pictures chosen in each step of the game. The explanations to be given to the respondent were short and clearly stated in the "Guide". (Appendix V).

Figure 4.3 summarizes the dimensions measured and the methods or instruments employed. The ethnographic methods, as will be shown in chapter 7, integrated in a qualitative analysis the set of dimensions measured by other means.

Figure 4.3 Summary of dimensions measured and methods/instruments of measurement.

Dimensions		Measurement Methods/ Instruments
Availability	ETHNOGRAPHIC METHODS	Inventory of food shops 24-hour recall interview
Socio-economic		24-hour recall interview
Patterns of eating		24-hour recall interview
Characteristics of foods		24-hour recall interview Game of pretend

4.3 Sample

The sampling method had to take into account the following two dimensions:

a) The availability of foods in the school environment operationally defined as the number of food shops around the school.

b) The social class of the respondent as indicated by the fact of attending a private school as opposed to a school located in a depressed area.

West Pilton was chosen as the depressed area from which part of the sample was to be selected. Mackay (1977) described some of the factors that justify qualifying this district of Edinburgh as an under-privileged area. The investigator's personal acquaintance with several homes of West Pilton as well as of other depressed areas in a context of voluntary youth work is at the origin of this decision. However, the number of newspaper articles published in the past two years about this area and the fact that the city's administration has recently made it a top priority for a rescue plan confirm that this choice was correct.

Identifying children attending private schools as being relatively privileged is questionable. Edinburgh has a relatively large number of private schools some of which are heavily subsidized. Therefore, children attending them may very well not come from wealthy, privileged families. However, the aim underlying this choice was not to select social class I and II children as much as to choose a population that was relatively privileged in comparison to a population of children known to be underprivileged. Attending a private school means more than having parents who can pay the tuition fees; it means being regularly exposed to a whole set of values that is likely to have

an impact on one's life-style including nutrition. Going to a school located in a depressed area means that the child lives in the area and is therefore constantly subjected to its depressing effects, already well described in Born to Fail? (Wedge and Prosser, 1973).

To measure the effect of availability, the schools had to contrast with regard to the number of food shops located in their surroundings. It was relatively easy to find private schools isolated from commercial establishments but only one private school in Edinburgh is surrounded by shops, many of which sell food. It was thus decided to select this unique private school and a private school isolated from commercial establishments. In West Pilton, it was not possible to find a school completely isolated from stores. Instead, the school with the smallest number of shops around was chosen in contrast with the school having the largest number of stores in its environment.

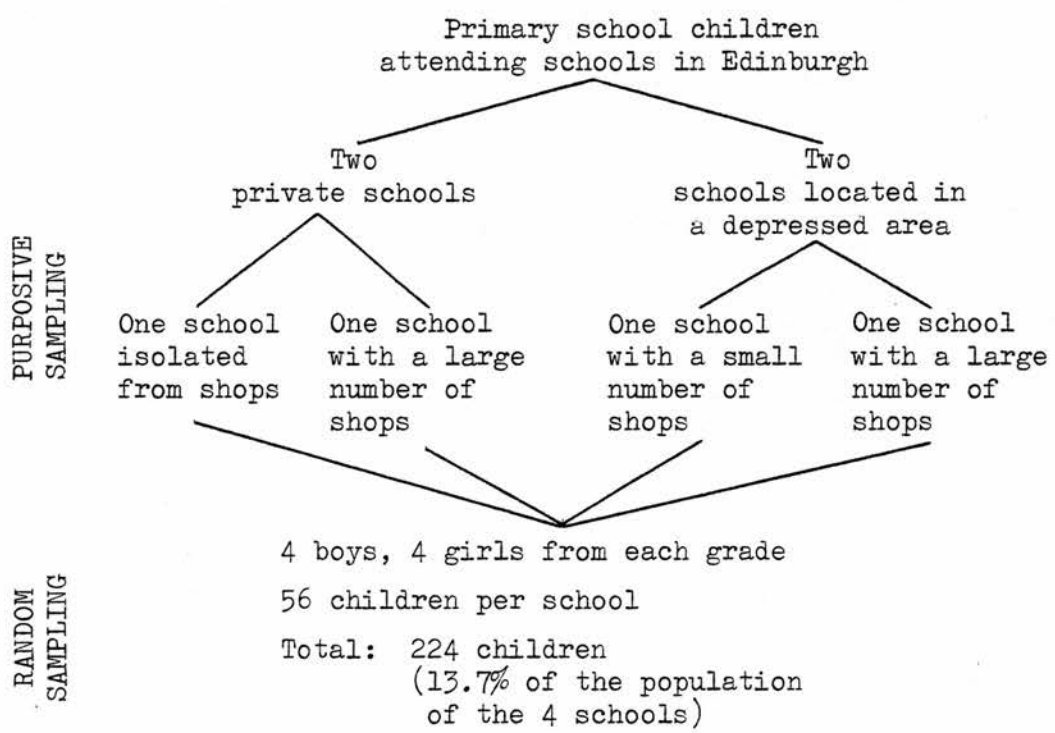
Thus, four schools constituted this purposive sample. Their population sizes were as follows:-

Private school with large number of shops	407
Private school isolated from shops	833
School in depressed area with large number of shops	149
School in depressed area with small number of shops	238
Total	1627

The population sizes of the two private schools being much larger than the sizes of the two schools in the depressed area, a stratified random sample would have included a greater proportion of relatively

privileged children. It was thus decided to determine the size of the sample to be drawn from each school. A sample size of fifty-six children per school was arbitrarily determined partly because time and resources did not allow for a larger size and partly because, given the exploratory nature of the study, this number appeared sufficient to identify emerging patterns. To obtain this sample size from each school, four boys and four girls were selected at random from each of the seven grades of primary school. Figure 4.4 schematizes how the sampling was done.

Figure 4.4 Schema of sampling method.



The lists used were those provided by the school authorities a few weeks after the beginning of the school year; therefore they were likely to be reliable and stable. As these lists contained only

names and grades, the investigator added the sex of each child with the help of a school secretary who had access to more complete records. Each name was attributed a number from "0" to the total of the population of the school. Then, using random numbers, the investigator sampled four boys and four girls per grade. Random numbers were pulled as long as four boys and four girls had not been selected. The number was rejected if, when a girl was needed, it corresponded to a boy and vice versa.

CHAPTER 5

ETHICAL CONSIDERATIONS

Ethical decisions had to be made at several stages of this project beginning with the ultimate aim of the research through to the communication of the findings.

5.1 Ultimate Aim of the Research

The objective of the research as stated in chapter 3 assumes that it is legitimate and desirable to attempt to modify human behaviour if, in the light of available knowledge, this behaviour is believed to be detrimental to people's health. Bensaid (1981) has brilliantly criticised this contention of health professionals arguing that preventive medicine has become a new religion based upon questionable scientific evidence.

The ethical issues involved in the type of research presented here are numerous and important. To debate the pros and cons is beyond the scope of this thesis but it was necessary for the researcher to be aware of and to communicate honestly to those concerned what was the ultimate aim of her project.

5.2 Approval of Study by School Authorities

The Lothian Regional Council Research Evaluation Committee approved the project. Subsequently, the head teacher of each of the four schools selected was met to request his/her permission to undertake the study in the school. This meeting was followed by a letter, addressed to the head teacher, stating the purpose of the research,

the methods used, the size of the sample, and the approximate period of data collection (Appendix VI). A copy of the letter of consent form to be used with parents was attached to this letter. Three of the four headteachers suggested minor modifications to the consent form thus resulting in the use of three slightly different letter of consent forms (Appendix VII a,b,c). Finally, it was also agreed with the school authorities that the data collection period should not extend over more than one school term.

5.3 Consent of Parents for 24-hour-recall Interview

Each sampled child was given a letter of consent form intended for his/her parents. The letter, as formulated, did not include the alternative of refusing to participate and it was assumed that a non-returned form was more likely to be due to the child's forgetfulness than to the parents' refusal. Thus following the headteachers' advice, a second and in some cases a third form was given to the child who had lost the previous one. In one school, the investigator was informed by the headteacher that the mother of a child could not read; this mother was visited at home and, after having been told about the research, gave her consent verbally.

It is worth mentioning here that, as the word spread in the schools about a "shopping game" being part of the interview, many children who had neglected to give the consent form to their parents returned it completed within a few days. This indicates that many children took pleasure in participating in the study.

Confidentiality was assured by not writing the name of the child or even the grade on the interview schedule.

5.4 Ethics in Using the Ethnographic Methods

The ethnographic data have been collected by participant and non-participant observations, and by interviews. Before the systematic data collection began in schools, the investigator had already carried observations in various settings and on a casual basis as was mentioned in chapter 1. During this period, the subjects of the observations were not informed of the fact of being observed for research purposes and it would have been impractical if not impossible to do so. Consider for instance the observations made in a cinema involving dozens of viewers. A camera was also used both in outdoor public places (streets, parks etc.) as well as in the context of youth work without requesting permission from the subjects and often without their awareness. Copies of the photographs taken in the context of youth work were often given to the children concerned.

For all the observations made in the school settings (school grounds as well as in the buildings), permission had been obtained from the school authorities. In one instance the camera was used during a morning playtime but a permission had been specifically requested from the headteacher. Again several prints were subsequently given to the teachers and displayed for the children to enjoy.

Whenever the investigator was observing children at school, particularly in the playground, she informed them of her identity and purpose. This prevented unnecessary discomfort among children who became surprisingly interested and cooperative, sometimes coming spontaneously to the investigator to "teach her" about a new "sweetie".

The children who became the informants through ethnographic interviews were selected in collaboration with the school authorities.

Following the headteacher's advice, the child's parents were not re-contacted to obtain permission for the ethnographic interviews as all the informants were selected from the sample and their parents had already agreed to their participation in the research. One headteacher, however, recommended to re-contact the parents as a matter of courtesy. Although this latter approach appeared preferable to the investigator, it was felt inappropriate to insist upon the schools to obtain the parents' permission for a second type of interview, and only the schools could provide the parents' address or telephone number. This resulted in an incident in which the investigator felt very embarrassed. A girl, selected upon the recommendation of the headmistress as a child who was likely to be a good informant, participated in one ethnographic interview without any problem. The following week however she did not show up at the time of the interview but arrived much later accompanied by her father. The father explained that his daughter had refused to return to school alone for fear of having to face the investigator for another interview. Presumably, the parents are in a better position to assess their child's willingness and capacity to contribute to a study than are the headteachers.

Once a child had been selected as a possible informant, he/she was told what was the purpose of the interviews and what would be expected of him/her. As the informants were to be met once a week for four or five weeks and during the after-lunch playtime, it was important to state clearly the implications of participating. A tape recorder was used but was never introduced before the second interview and after the child had agreed to the recording. Male informants expressed much enthusiasm towards the use of the tape

recorder; they learned how to operate it, and were allowed to stop it and to listen to parts of the interviews at will.

The use of game-like tasks involving pictures, the use of real foods, the taking of photographs and the possibility to play with a tape-recorder quickly made the ethnographic interviews very popular. In one school, it became a problem when many children began to insist on being interviewed too, and their offer had to be rejected. Yarrow (1960) stated:

> The interview experience itself can be a gratifying one to children of all ages; their feelings of status are enhanced by receiving the full attention of an interested adult.
>
> (p.568)

Clearly the ethnographic interviews were perceived as a gratifying experience by most of the informants.

Three informants were uncooperative but, as they ceased to show up for the interviews, it was not traumatizing for them to learn that another child would be chosen in replacement. One girl turned out to be a poor informant although she was cooperative. As she had expressed to the school nurse her pleasure in participating in the interviews, it was decided to keep her as an informant to avoid any risk of her feeling incompetent or rejected.

As was mentioned earlier, actual food items were used with informants either as a reward or to test a hypothesis. No sweets, crisps or any other non-recommended foods were used for these purposes for two reasons. Firstly, the investigator did not want to interfere with any attempt on the part of parents or school authorities to discourage children from eating these foods. Secondly, as a

nurse, the investigator felt a responsibility in not contributing to making non-recommended foods more popular than they already are.

5.5 Expression of Appreciation to Participants

Appreciation of their participation was expressed to schools, parents and children in various ways. According to the 24-hour-recall procedure, all participants were to be thanked at the end of the interview. The children who were informants for the ethnographic interviews were given a small gift at the end, an obviously appreciated gesture.

In one school, the headteacher suggested sending a letter of thanks to every parent whose child had been interviewed. (Appendix VIII). In the other schools, a letter of appreciation was sent to the headteacher only with a promise to communicate the findings (see Appendix IX for an example of such letters).

A summary of the main findings was given to each participating school. This was done in the form of a copy of a paper prepared for other purposes but suitable for the school authorities. A copy of this same paper was sent to the father of a child who had expressed his wish to receive a summary of the findings. The investigator also offered to meet with any group of teachers or parents interested to learn more about the study.

The precautions taken in this study to safeguard the participants' right to welfare, dignity and privacy are believed to comply with the "Principles of Professional Responsibility" adopted by the American Anthropological Association. (American Anthropological Association, 1971).

CHAPTER 6

DATA ANALYSIS AND DISCUSSION OF FINDINGS

This chapter is confined to the data obtained from the inventory of shops, the 24-hour-recall interviews and the game of pretend. After a description of the data processing, the reliability of the data is discussed. This is followed by the presentation and discussion of the findings in relation to each of the five hypotheses.

This analysis of the findings raises some questions about children's eating which are addressed in Chapter 7, the ethnography.

6.1 Participation Rate

Table 6.1 gives the percentage of participation for each school. The following abbreviations refer to the four schools:

Priv. L.D. : Private school isolated from shops. (L.D. standing for "low density")

Priv. H.D. : Private school heavily surrounded by shops. (H.D. standing for "high density")

Dep. L.D. : School located in a depressed area with few shops in its environment.

Dep. H.D. : School located in a depressed area with many shops in its environment.

An overall percentage of participation of 85.7% compares advantageously with rates obtained in other similar studies. If we examine the figures for the two types of schools, we can see that the participation rate is higher for the private schools than for the depressed schools.

Table 6.1 Participation rate per school and per type of schools (Private vs. Depressed)

School	Participation rate per school (Nb. of participants)	Participation rate per type of schools (Nb. of participants)	Overall % of participation (Nb. of participants)
Priv. L.D.	82.14% (46)	88.39% (99)	85.71% (192)
Priv. H.D.	94.64% (53)		
Dep. L.D.	87.50% (49)	83.03% (93)	
Dep. H.D.	78.57% (44)		

However, the percentages of participation of the schools taken individually show that the lower rate in depressed schools is due to a much lower participation of the "Dep. H.D." school. It is worth mentioning here the problems encountered in this school that explain this low response rate. The school is located in a particularly deteriorated section of West Pilton that has been the object of demolition plans for several years. A few weeks before the study began, rumours circulated that these plans would be executed in the near future. As a result, many families moved from the district and the population of the school decreased dramatically. Each week more children from the original sample were leaving and it became difficult to replace all of them.

6.2 Processing of Data

The processing of data included the editing of the interview schedules, the coding of the raw data, and the handling of the coded data.

6.2.1 Editing the interview schedules

Each week, the completed interview schedules were examined by the investigator to discover any inconsistencies, illegible words, or missing information. At the end of the first week, it was noticed that few children had reported the school milk although it was known to be widely consumed at least in the depressed schools. At the first weekly meeting with the interviewers, this problem was discussed and it was decided to probe specifically for the school milk in the remaining interviews.

Unusually low or high recalls were also found when editing the questionnaires. Unusually low recalls were often accompanied by a note from the interviewer reporting the respondent's own comment about having difficulty in remembering the foods eaten. Such a note and common sense were used to decide whether the recall could be considered valid or not. A total of nine recalls were thus rejected because they appeared too incomplete; in each case the respondent was younger than six years of age. Two recalls were unusually high. One nine year old boy from a depressed school reported a total of 31 food items of a wide variety, and another boy, the same age, from a private school pretended to have had eleven cups of milk. Although extravagant, these recalls could reflect the actual consumption and, as they were both consistent and the intake was possible, it was decided to keep them.

6.2.2 Coding the raw data

6.2.2.1 The inventory of food shops.

As explained in Chapter 4, each food shop was classified into one of the categories of "type" on the basis of the name of the shop and the relative importance of the different sorts of foods available. The business hours were coded following the categories listed in Chapter 4; for that purpose, school hours were considered to be from 08:30 until 15:00.

6.2.2.2 The 24-hour-recall interviews.

A major difficulty encountered in coding the 24-hour recalls was that the number of food items reported varied substantially from one respondent to another and so did the nature of the foods eaten. To simplify both the coding and the statistical analysis, it was decided to regard each food item, rather than each respondent, as a case. As mentioned in Chapter 4, the variable "nature of food" had no pre-determined categories at the time of data collection. To determine these categories, the following procedure was used. The name of each food item reported was written on a small card. These foods were then grouped on the basis of the similarity of their composition and a name was given to each group thus constituting one category of the variable "nature of food". In this manner, sixty categories were determined such as "wholegrain cereals with milk and sugar", "tea or coffee with milk and sugar", "plain white roll", "vegetable soups", "stews", "beans", "raw vegetables", "crisps" or "peanuts". The complete list of these categories is reported in Appendix X. At this stage, it was thought important to have a large number of categories that would allow for exploration of specific

sorts of foods and that could be grouped easily in larger classes if desired.

Subsequently each food item reported was coded with regard to each of the variables measured: sex and age of the respondent who had reported it, school attended by the respondent, day of consumption, frequency of food consumption, amount of pocket money received weekly by the respondent, nature of the item (i.e. one of the sixty categories listed in Appendix X), each variable of characteristics and each variable of patterns. The code book developed for that purpose is presented in Appendix XI. A total of 2,437 food items were coded in this manner.

6.2.2.3 The game of pretend.

The findings obtained with the game of pretend were coded separately and, here, <u>each respondent was a case</u>. As mentioned in Chapter 4, the game was played in three steps asking the child to buy a decreasing number of foods in an attempt to simulate reality. It was assumed that the foods bought when the money supply is reduced would be more highly valued by the child than those bought when he/she does not need to be as selective. The coding strategy was devised on the basis of this assumption.

The data were coded by attributing a score to each of the sixteen cards as follows. Each time a food was chosen in step 1, it scored one (1) point, in step 2 it scored two (2) points. The single food selected in step 3 was attributed three (3) points. The code book used appears in Appendix XII.

6.2.3 <u>Handling the coded data</u>

The coded data were recorded on special coding forms and were transferred onto discs by the Edinburgh Regional Computing Centre

Key punchers. The Statistical Package for the Social Sciences was used for most of the analyses.

6.3 Reliability of the Data

6.3.1 Inter-interviewers reliability checks

In order to test the reliability of the data between the three interviewers, the average number of food items reported to each of them was compared. Table 6.2 presents the mean of the numbers of items reported to each interviewer in the two types of schools. The chi-square indicates that the differences between interviewers is not significant.

Table 6.2 Comparison between interviewers of the mean of the numbers of food items reported to them in each type of school.

Types of schools / Interviewer	Depressed	Private	Total
A	10.31	12.12	22.43
B	14.63	13.38	28.01
C	11.95	11.84	23.79
Total	36.89	37.34	74.23

chi-square = 0.212, not significant d.f. = 2

6.3.2 Reliability of the coding of the raw data

As mentioned in Chapter 4, the characteristics of the food items were coded by the investigator on the basis of her own subject-

ive experience with each food. To increase the reliability of such coding, an index of foods was constituted and used throughout the coding. This index, which appears in Appendix XIII, contains mainly commercially available items as it was found less difficult to code home-prepared foods in a consistent manner given the categories retained. Although the classification of some foods into the various categories is arguable, the index provided a stable basis for reference.

The data describing the patterns of eating were easier to code. The time of consumption had been recorded on the interview schedules using the words of the child. The expressions most commonly used were: before or after school; breaktime or playtime; lunchtime; teatime or dinnertime or suppertime; bedtime; or simply the hour of the day. As these expressions are close to the categories retained for the variable "time", their classification into these categories did not present problems. In a few instances, the respondent reported a "big brother", "big sister" or "big cousin" as the company and it was not always clear whether these persons should be regarded as adults or as peers.

The data recorded onto coding forms were checked against the raw data for the variables of sex, age, and pocket money. One error was detected and corrected.

6.3.3 Reliability of the key punchers.

The reliability of the key punchers was tested by checking the printouts of the raw data input against the coding forms. The 24-hour-recall interviews were checked for the following variables only: sex, day of recall, age and pocket money. Not a single

mistake was discovered. Considering that the number of cases was over 2,000, it was decided not to extend the verification to other variables. The data from the game of pretend was completely checked and two key-punch errors were detected and corrected.

6.4 Presentation and Discussion of Findings

The findings will be presented by describing how the sample was distributed with regard to age and sex. Then each hypothesis will be tested and discussed.

6.4.1 Sample: sex and age distribution

Table 6.3 shows the distribution of respondents per school according to sex. The sample was well balanced with regard to sex as a result of the sampling strategy of selecting an equal number of boys and girls per grade.

Table 6.3 Frequency distribution of respondents by school according to sex.

School \ Sex	Female	Male	Total per school
Priv. L.D.	21	25	46
Priv. H.D.	26	26	52
Dep. L.D.	26	23	49
Dep. H.D.	24	19	43
Total	97	93	190(1)

(1) Excluding two respondents whose sex was not recorded.

Figure 6.1 Age distribution of respondents during the autumn of 1981 (age at last birthday). Percentages of total sample are given for each age.

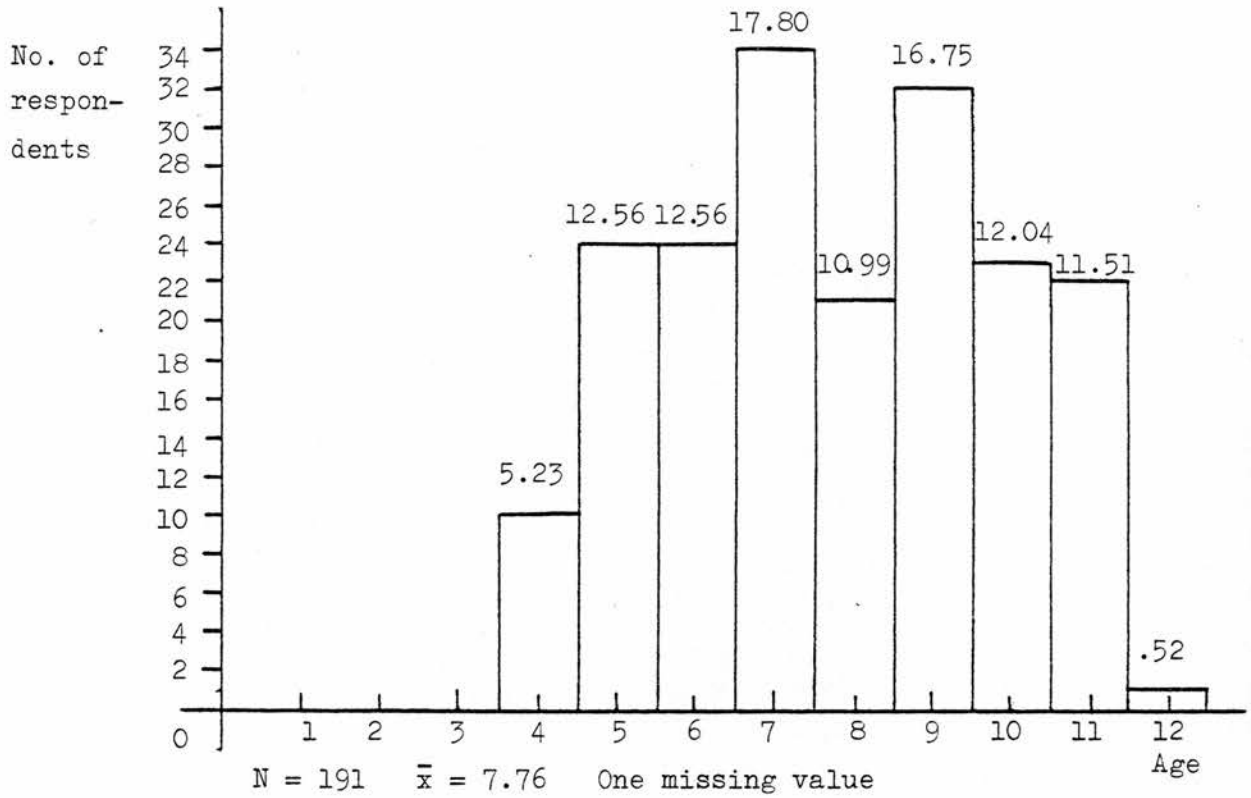
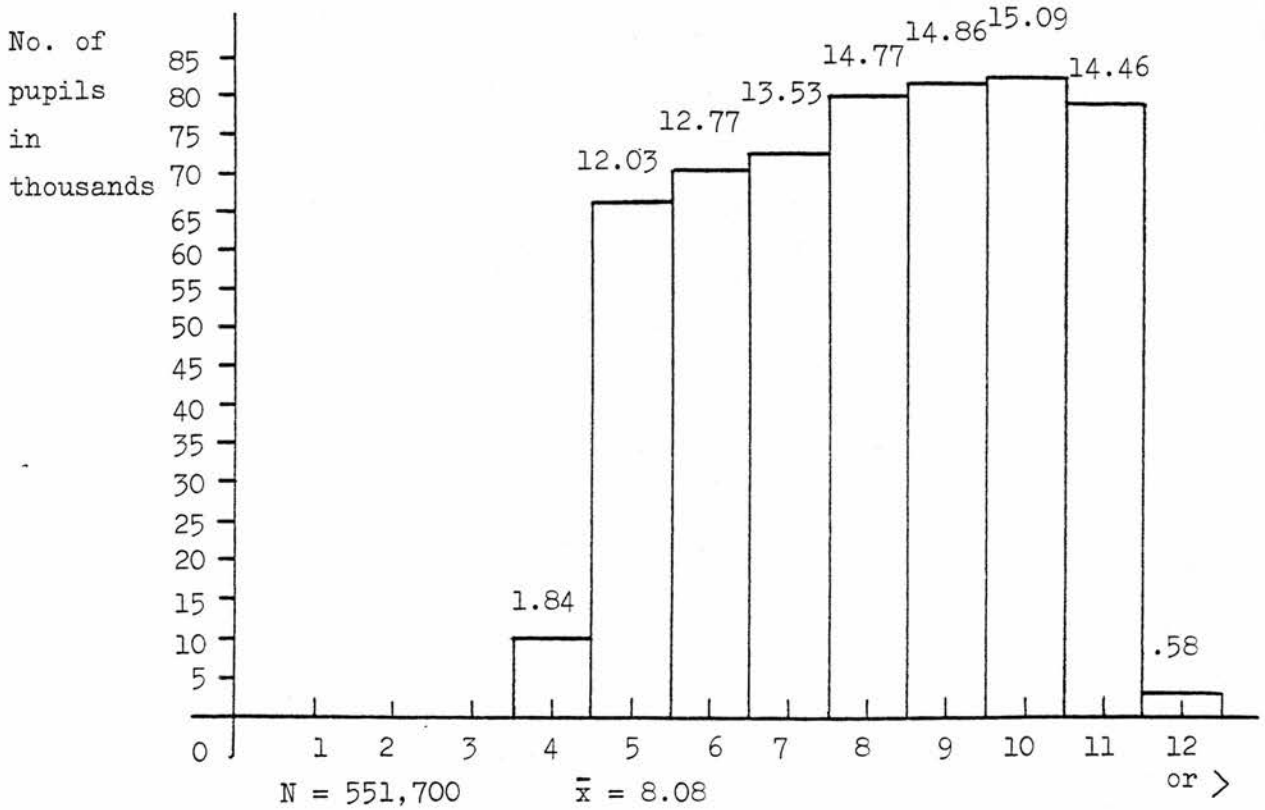


Figure 6.2 Age distribution of primary school children in Scotland during the session 1979-1980 from Scottish Education Department Statistical Bulletin No. 4/A_1/1982 (age at 31 December 1979). Percentages of total population are given for each age.



The age distribution of respondents in comparison to the age distribution in the total population indicates how representative the sample was. Appendix XIV reports the age distribution of Scottish primary school children in absolute numbers and in percentages of the total population. Figures 6.1 and 6.2 illustrate with histograms the age distribution of the pupils from the sample and from the total population respectively. The mean of the sample is smaller than the mean of the total population. The sample included a larger percentage of four-year olds than that found in the population as a whole; conversely the percentage of eight-year olds was smaller in the sample. The high percentage of four-year olds in the sample can be explained by the fact that the data were collected in the autumn (before the 31st December) and the age was recorded as reported by the respondent rounding up to the age at the last birthday. Also the figures for the total population are for the year prior to the data collection. The lower percentage of eight-year olds remains unexplained. The second table in Appendix XIV shows a trend towards increasing proportions of four-year olds and decreasing proportions of twelve-year olds over the years; the sample reflects that tendency of the population.

6.4.2 Analysis of findings in relation to hypothesis no. 1

Hypothesis No. 1: The availability of foods in their school environment influences the food consumption of primary school children.

The findings related to this hypothesis will be presented in two parts beginning with the results of the inventory of shops. This will provide a concrete description of the two types of school

environments chosen namely "low availability" versus "high availability" of foods. In the second part the data obtained from the 24-hour-recall interviews will be analysed to test any correlation between some variables of food consumption and three variables of availability: Type of school environment, Day of consumption and weekly Money allowance.

6.4.2.1 Findings obtained from the inventory of shops.

Table 6.4 gives the number and business hours of shops per category in the environment of the "Private high density" school. Out of thirty-eight establishments, twenty-two were pubs or restaurants and therefore were not patronized by primary school children. From the observations reported in Chapter 1, the types of food shops popular among children are C.T.N.s and chip shops which constitute in this school environment more than one-third of the establishments selling foods excluding pubs and restaurants. The business hours indicate that two of the three C.T.N.s are open before, during and after school hours. As for the school tuck shop, the business hours and type of foods sold are given below.

From 10:55 to 11:15 : crisps, rolls and sweet buns.
From 11:55 to 13:15 : sweets, crisps, juice and soft drinks.

The morning break for primary school children ends at 10:55; so they do not have access to the tuck-shop at breaktime, but they do at lunch time. The business hours of the chip shops are less convenient for primary school children especially if we consider that, in this particular school as in most others, pupils are not allowed to leave the school grounds at breaktime or lunchtime.

Table 6.4 Number and business hours of shops per category of shops in the environment of the Private high density school.

Categories of Shops	Number	Business Hours[1]		
		a	b	c
Fruit Shop	1	0	1	0
Bakery	1	1	0	0
Butcher, Fishmonger	2	2	0	0
Grocery, Supermarket	3	2	1	0
CTN, Tuck Shop	3	2	1[2]	0
Takeaway, Chip Shop	3	0	3	0
Wholefood Shop	1	1	0	0
Pub	14	not recorded		
Restaurant	8	not recorded		
Other	2	0	2	0
Total	38	8[3]	8[3]	0

1. a = open before, during and after school hours

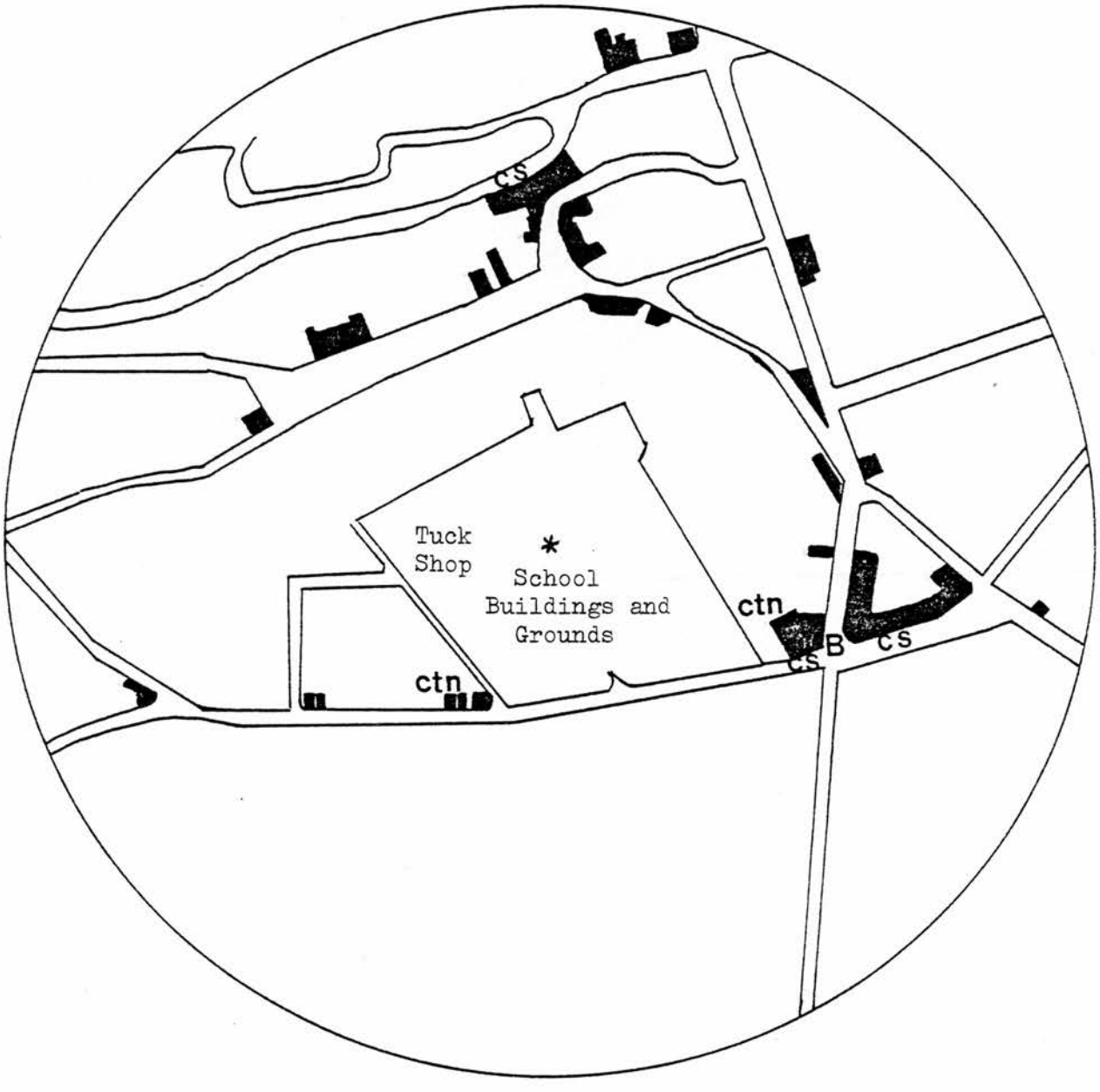
   b = open during and after school hours

   c = open after school hours only. Closed at lunchtime

2. School tuck shop open at break and lunch time only

3. Excluding the pubs and restaurants.

Figure 6.3 Map of the area within a one-quarter of a mile radius around the Private high density school (All darkened areas are commercial establishments).



* School main entrance
C.T.N. = Confectionery, Tobacco, Newsagent shop
C.S. = Chip shop
B = Bus stop

As mentioned in Chapter 4, a distance of one-quarter-of-a-mile is much longer than the distance most children would walk to go to school. It becomes important then to examine how close to the school the C.T.N.s and chip shops are. Figure 6.3 reproduces on a reduced scale the main features of the Ordnance Survey Map of the area within a one-quarter-of-a-mile radius around the same school. The map shows that the two C.T.N.s and two of the three chip shops are very close to the school entrance. The location of the nearest bus stop in relation to the two chip shops and one C.T.N. is also meaningful.

There were no commercial establishments in the environment of the "Private low density" school. As stated earlier, this is often the case with private schools. On the contrary, in the depressed area chosen it was impossible to find a school completely isolated from shops. Therefore, the school with the highest number of shops will be contrasted with the school with the lowest number.

Table 6.5 reports the number and business hours of shops per category in the environment of the "Depressed high density" school. In comparison to the environment described previously, this one has a much lower number of establishments selling food due to the absence of restaurants and pubs (except one). The "Priv. H.D." school is located in a heavy commercial area near the city centre whereas the "Dep. H.D." school is in the middle of a residential area; this explains the small number of restaurants and pubs. Another substantial difference between the two environments is the number of groceries and supermarkets which is twice as large in the case of the "Dep. H.D." school as it is for the "Priv. H.D." school.

Table 6.5 Number and business hours of shops per category of shops in the environment of the Depressed high density school.

Categories of shops	Number	Business Hours[1]		
		a	b	c
Fruit Shop	2	1	1	0
Bakery	1	0	1	0
Butcher, Fishmonger	1	0	1	0
Grocery, Supermarket	6	2	4	0
CTN, Tuck Shop	3	2	1	0
Takeaway, Chip Shop	2	0	0	2
Wholefood Shop	0	0	0	0
Pub	1	not recorded		
Restaurant	0	0	0	0
Other	0	0	0	0
Total	16	5^2	8^2	2^2

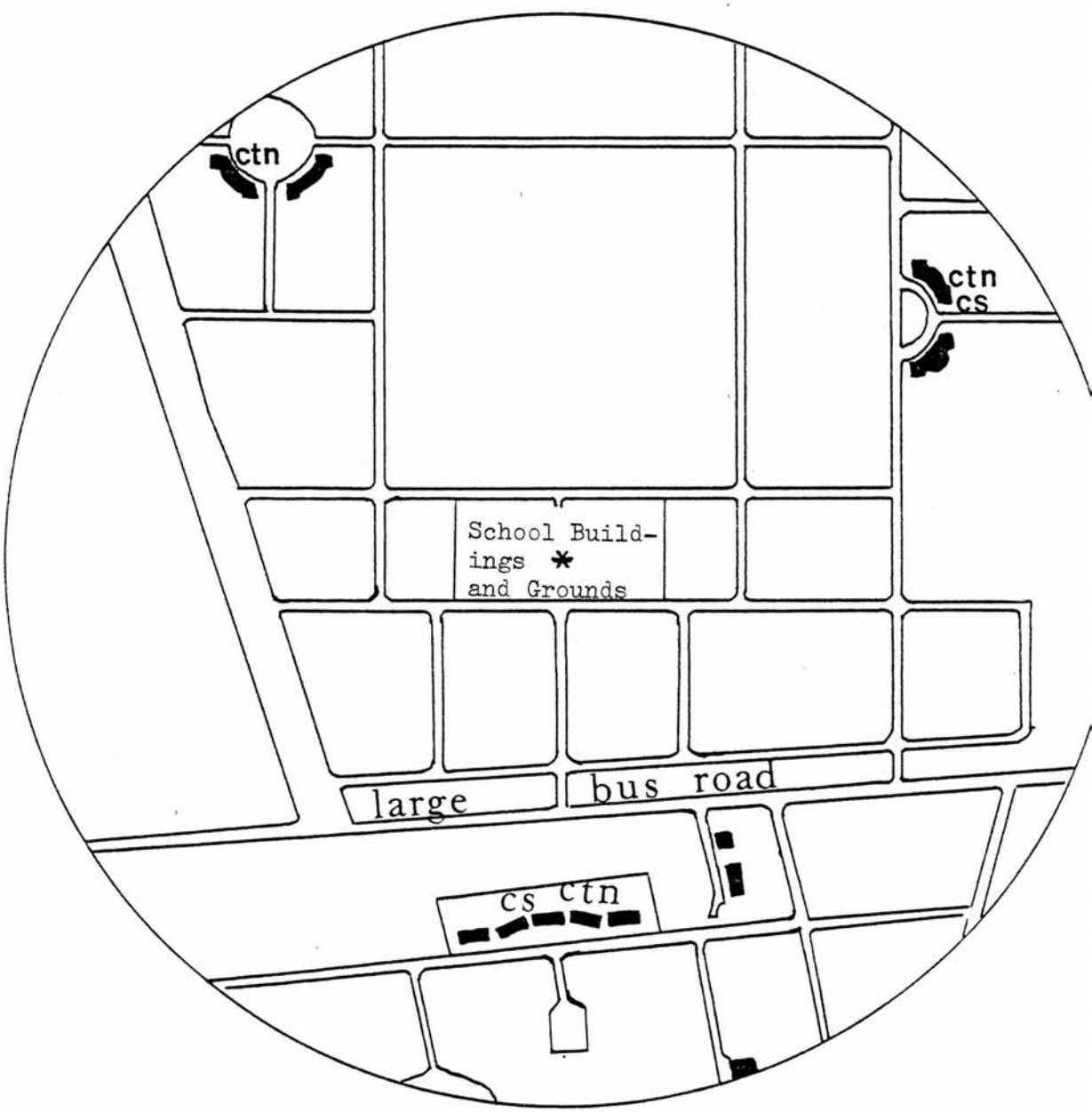
1 a = open before, during and after school hours

b = open during and after school hours

c = open after school hours only. Closed at lunchtime

2 Excluding the pub.

Figure 6.4 Map of the area within a one-quarter of a mile radius around the Depressed high density school (All darkened areas are commercial establishments).



School main entrance
.T.N. = Confectionery, Tobacco, Newsagent shop
.S. = Chip shop

With regard to the other types of establishments, the two environments are similar particularly in the number of C.T.N.s and chip shops.

The business hours of the shops show that most of them are not open before the start of school in the morning and that the two chip shops open only after school hours. This is in clear contrast with the "Priv. H.D." school environment where half of the shops are open before school time and the three chip shops are open at lunch time. The business hours of the C.T.N.s are exactly the same for both the "Dep. H.D." and the "Priv. H.D." schools. It is important to point out here that the pupils attending the depressed schools were allowed to leave the school grounds at lunch time which was not the case in the private schools.

The number and business hours of shops become more meaningful if we examine their location in the school environment illustrated in Figure 6.4. The map shows that all the commercial establishments were situated at the periphery of the pre-determined area. Also there was a large and busy bus route separating the school from the shopping centre which included one chip shop and one C.T.N. at the time of the data collection. As a consequence of these facts, it was unlikely that children would pass by a shop on their way to or from the school. It also means that if they wanted to "shop" at lunch time, they had to walk a relatively long distance. This is a problem that the pupils attending the "Dep. L.D." school did not have.

Table 6.6 gives the number and business hours of shops per category in the environment of the "Depressed low density" school.

Table 6.6 Number and business hours of shops per category of shops in the environment of the Depressed low density school.

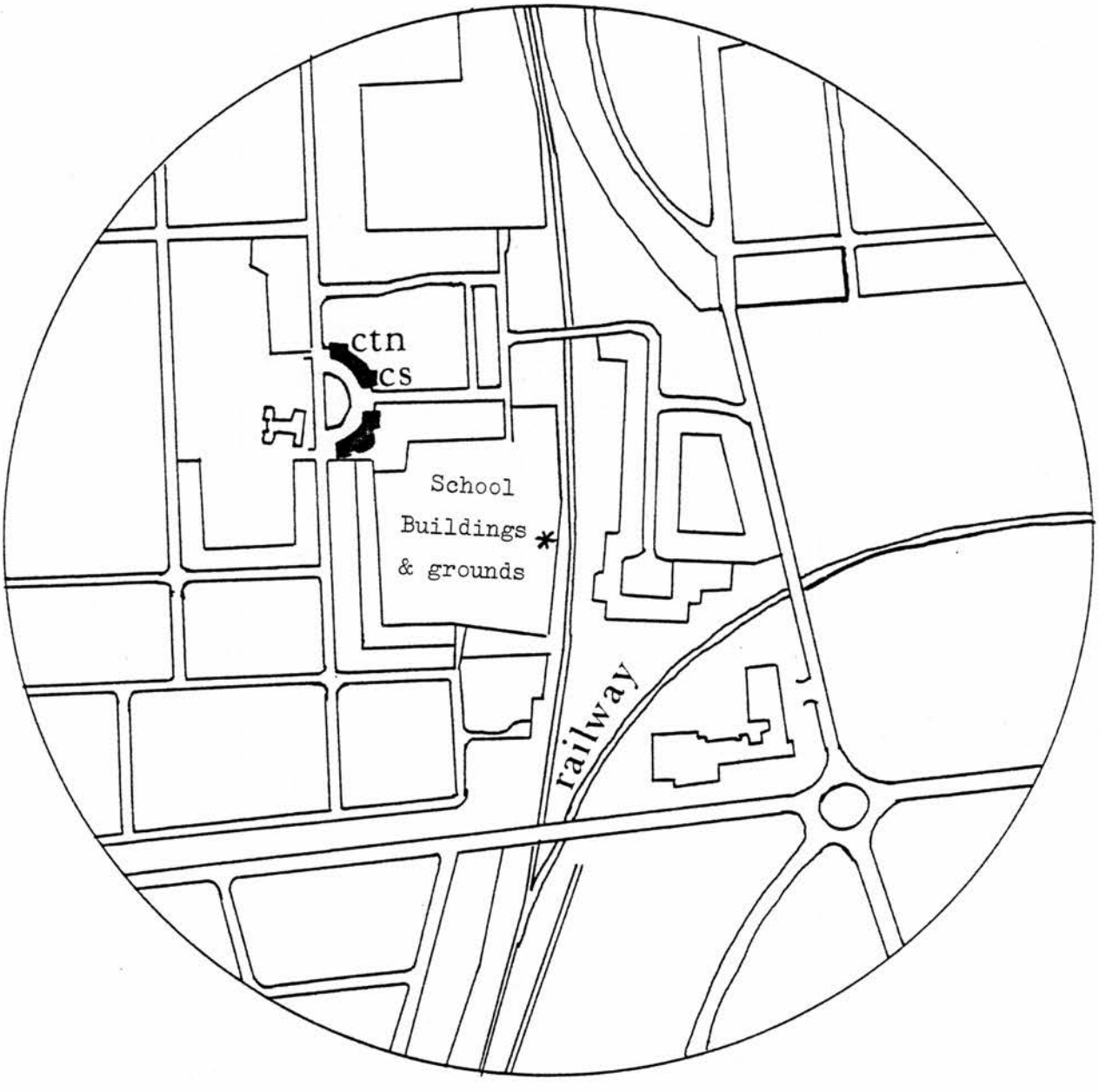
Categories of Shops	Number	Business Hours[1]		
		a	b	c
Fruit Shop	1	1	0	0
Bakery	0	0	0	0
Butcher, Fishmonger	0	0	0	0
Grocery, Supermarket	2	2	0	0
CTN, Tuck Shop	1	1	0	0
Takeaway, Chip Shop	1	0	0	1
Wholefood Shop	0	0	0	0
Pub	0	0	0	0
Restaurant	0	0	0	0
Other	0	0	0	0
Total	5	4	0	1

1 a = open before, during and after school hours

b = open during and after school hours

c = open after school hours only. Closed at lunchtime

Figure 6.5 Map of the area within a one-quarter of a mile radius around the Depressed low density school (All darkened areas are commercial establishments).



* School main entrance
C.T.N. = Confectionery, Tobacco, Newsagent shop
C.S. = Chip shop

The number of shops is much smaller than was the case for the two "high density" schools and therefore this environment can be qualified as one with a relatively low availability of food. Comparing this table with Tables 6.4 and 6.5 we can identify some consistency in the types of shops located in the three different environments. There appears to be a pattern whereby at least one shop from the following categories is present in any commercial area: fruit shop, grocery or supermarket, C.T.N. and chip shop.

The business hours were very suitable to school children as four out of five of these shops were open before, during and after school hours. Only the chip shop opened after school hours. Again, these data become more significant if we examine the location of the shops as illustrated in Figure 6.5. The C.T.N. was very near the school. Considering that it was open before, during and after school hours, and given the fact that children were allowed outside the school grounds, this unique C.T.N. might have had more impact on children's food habits than the three C.T.N.s of the "Dep. H.D." school put together.

This inventory of shops helps to visualize what kind of pressure children are subjected to from their school environment. The emphasis was put on the number and location of C.T.N.s and chip shops as these two categories of shops had appeared to be the most popular among children. The effects of the number and proximity of all food shops on some variables of food consumption will now be examined.

6.4.2.2. Findings obtained from the 24-hour-recall interviews

The influence of availability will be explored on three aspects of eating, namely the Frequency, Time and Quality of food consumption.

The analysis of the data obtained from the inventory introduced the concept of proximity of shops which had not originally been thought of as an indication of availability. Therefore, the effect of the proximity as well as of the number of shops (density) will be tested.

The frequency of consumption refers to the number of times the respondent had eaten during the day recalled; each episode of food consumption regardless of the quantity or quality eaten was included. Nicod (1979) called these episodes of consumption "food events" and defined them as follows:

> A 'food event' is an occasion when food is eaten, without prejudice as to whether it constitutes a meal or not. A 'structured event' is a social occasion which is organised according to rules prescribing time, place and sequence of actions. If food is eaten as part of a structured event, then we have a 'meal'. A 'snack' is an unstructured food event, in which one or more self-contained food items may be served.
>
> (p.57)

The number of food events reported ranged from two to fifteen. Table 6.7 reports the mean and variance of frequency per school.

Table 6.7 Mean and variance of the frequency of consumption by school.

School	Mean	Variance	Nb. of cases
Priv. L.D.	5.37	2.24	43
Priv. H.D.	5.21	1.39	52
Dep. H.D.	5.47	2.25	42
Dep. L.D.	6.65	4.90	46
All schools	5.67	2.96	183[1]

[1] 9 missing values

The differences between the values of the variance of the four schools are too large to allow the use of the analysis of variance test (the largest variance is more than twice the smallest one). Thus a non-parametric test (the chi-square) appeared more appropriate. For the purpose of the chi-square test, the categories of Frequency were reduced to two nominal categories: "Common" and "High" frequency. On the basis of the values of the means of Frequency of consumption reported in Table 6.7, it was decided that all values superior to 6 would be called "High frequency", the others being considered "Common". This choice also makes sense considering that most children eat three meals a day and may have a morning, an after-school and an evening snack.

Table 6.8 reports the Frequency of consumption by type of school environment. ("Low" versus "High" density); it shows that there is no significant correlation between the two variables.

Table 6.8 Number of children who had eaten six times or less (common frequency) or more than six times (high frequency) according to the type of school environment to which they were exposed.

Types of environments \ Frequency of consumption	Common frequency	High frequency	Total
Low Density	65	20	85
High Density	67	31	98
Total	132	51	183

d.f. = 1, chi-square = 1.4839, not significant.
9 missing values.

Regarding the variable time of consumption, it had been hypothesized that children attending the "high density" type of environment would eat more often between meals than those exposed to the "low density" school environment. For this analysis, the categories of time of consumption were grouped as below:

Before or at breakfast time lunch time dinner time bedtime	Mealtime
Morning (between breakfast and lunch) Between lunch and dinner Between dinner and bedtime	Between meals

The category "Bedtime" was included into "Mealtime" because, as will be seen later, the type of eating done at bedtime is closer to the type of eating that can be observed at mealtime than to the kind of consumption occurring between meals.

From now on, unless otherwise stated, each case will correspond to a food item rather than a respondent for reasons explained at the beginning of this chapter (see pp. 84 , 85). Thus, the findings will be expressed in terms of numbers of foods reported by children as they relate to other variables.

Table 6.9 is a cross-tabulation of the time of consumption by the types of school environments ("low" versus "high density"). It shows that more foods eaten "between meals" were reported by children attending the "low density" environments. The chi-square indicates that this correlation is significant at a probability level of less than .01. Again, the hypothesis is not supported by the findings.

Table 6.9 Number of foods consumed at mealtime versus between meals reported by the respondents according to the type of school environments to which they were exposed (Low versus High density).

Types of environment \ Time of consumption	Meal Time	Between meals	Total
Low Density	890	370	1260
High Density	881	287	1168
Total	1771	657	2428

d.f. = 1, chi-square = 7.06, $p < .01$.
9 missing values.

In addition to frequency and time of consumption, it is important to examine the quality of consumption as it relates to the availability of foods. The present research was not meant to be a nutrition survey and, therefore, the quality of consumption was not measured in terms of the nutritional values of the food consumed. Rather, the sixty categories of foods listed in Appendix X have been grouped differently to examine various aspects of quality sometimes focusing on specific foods (e.g. milk, chips, fruit), and at other times grouping the categories to contrast different types of foods, (e.g. recommended versus non-recommended foods). The two groupings retained in this section are the following ones:

a) Foods children like to buy in newsagent shops (CTN foods) in contrast with other foods.

b) Recommended versus non-recommended foods.

It was thought that children exposed to a greater number of shops (implying a greater number of CTNs) would be likely to consume more of the kinds of foods available in newsagent shops. In order to test this, the following categories were grouped and called "C.T.N. foods": crisps, biscuits, sweets and chews, lollipops, chewing gums and bubble gums.

Table 6.10 gives the number of "CTN-foods" and "Other foods" by type of school environments. It shows that proportionately more "C.T.N. foods" were reported by the children exposed to the "low density" environment and this fact is significant at a probability level of less than .0001, another contradiction of the hypothesis.

Table 6.10 Number of CTN-foods versus other foods reported by the respondents according to the type of school environment to which they were exposed (Low versus High density).

Types of foods / Types of environment	C.T.N. Foods	Other Foods	Total
Low Density	256	1010	1266
High Density	163	1008	1171
Total	419	2018	2437

d.f. = 1, chi-square = 16.96, $p < .0001$.

The fact that some children eat more C.T.N. foods than others does not necessarily mean that their overall nutrition is poorer. To have a better appreciation of the influence of the number of shops on nutrition, the categories of foods were grouped on the basis of

their being recommended or not by health professionals. Thus, using the guidelines stated in the booklet Eating for Health (quoted in Chapter 1) the categories listed in Appendix X were grouped as follows:

Recommended:	all foods not included in the two categories below.
Non-recommended: (the guideline being to avoid foods high in fats and sugar)	soft drinks, tea or coffee with milk and sugar, chips, crisps, biscuits, jelly based desserts, cakes etc, various home-made sweets, sweets, lollipops, chewing gums and bubble gums.
Mixed:	Non-whole grain cereals with milk and sugar, whole grain cereals with milk and sugar, tea or coffee with milk only, flavoured milk drinks, white or brown bread with sweet topping, savoury pies, tinned meat, beans, tinned fruits, crackers, flavoured yoghurt, milk based dessert, cake with custard, and the odds (last category in Appendix X).

It must be pointed out here that in the analysis, brown bread has not been distinguished from white bread because the data were not reliable enough on that detail. The quality of bread (brown or white) was recorded as it was reported spontaneously by the respondent. As probing was not used systematically on that point, it cannot be assumed that the child meant white bread when not specifying that it was brown.

It had been hypothesized that proportionately more "non-recommended" foods would be reported by the pupils exposed to a "high density" school environment but the findings do not support this hypothesis. Table 6.11 reports the number of foods within each category of Quality by Type of school environment. The data are

distributed more or less evenly between the "low" and "high" density types of environment resulting in a non-significant difference between the two types. Therefore, the null hypothesis of no influence on the number of shops on the quality on consumption cannot be rejected.

Table 6.11 Number of recommended, non-recommended and mixed foods reported by the respondents according to the type of school environment to which they were exposed (low versus high density).

Types of foods / Types of environment	Recommended	Non-Recommended	Mixed	Total
Low Density	499	505	262	1266
High Density	516	435	220	1171
Total	1015	940	482	2437

d.f. = 2, chi-square = 5.46, not significant.

The number of shops in the school environment had been chosen as an indication of the availability of foods. However, as stated earlier, the inventory of shops suggested that their proximity could also be determinant. It is worth reminding here that the two "high density" schools differed regarding the location of shops in their surroundings. While the "Priv. H.D." school had two C.T.N.s and two chip shops close to its main entrance and one tuck shop within the school itself, the "Dep. H.D." school had no shop really close to it, although there were many shops within the pre-determined en-

vironment. Consequently, it was decided to test the influence of the proximity of shops on the Frequency, Time and Quality of consumption.

Using the concept of proximity as an indicator of availability, the two schools having shops close to their main entrance were grouped and labeled "high proximity" schools. In this way, the original categorization of each school was changed as below:

Private low density	:	Private low proximity
Private high density	:	Private high proximity
Depressed low density	:	Depressed high proximity
Depressed high density	:	Depressed low proximity

The data were then retested in the same way as previously for a correlation between the three variables of consumption and the fact of being exposed to a "low" or "high" proximity type of school environment. The results, condensed in Table 6.12, show a significant correlation going in the suspected direction between the Time and Quality but not the Frequency of consumption and the Type of school environment. In summary, this table indicates that proportionately more foods reported by the pupils attending the two "high proximity" schools 1) had been consumed "between meals", 2) were either "non-recommended" or "mixed" kinds of foods, and 3) were "C.T.N.s-foods". Although children attending the two "high proximity" schools were also found to have a tendency to eat more frequently, this tendency is not statistically significant.

The day recalled by the respondent was also thought to belong to the dimension of availability with the assumption that during a week-end or a holiday, children have more time, and perhaps more money,

Table 6.12 Number of children who had eaten six times or less (common frequency) or more than six times (high frequency) and number of foods per category of time and quality according to the type of school environment to which the respondents were exposed (high proximity).

VARIABLES	Categories \ Types of school environment	Low Proximity	High Proximity	Total	Chi-Square
FREQUENCY	Common frequency	65	67	132	1.4713
	High frequency	20	31	51	1 d.f. not significant
	Total	85	98	183[1]	
TIME	Meal time	859	912	1771	26.45
	Between meals	242	415	657	1 d.f.
	Total	1101	1327	2437	p< .0001
QUALITY	Recommended	491	524	1015	6.35
	Non-recommended	404	536	940	2 d.f.
	Mixed	211	271	482	
	Total	1106	1331	2437	p=.0416
	C.T.N. foods	169	250	419	5.20
	Other foods	937	1081	2018	1 d.f.
	Total	1106	1331	2437	p=.0225

[1] Excluding 9 missing values.

to go to shops than on school days. Therefore, it had been hypothesized that children would eat more frequently on holidays than on school days, and that more foods would be eaten between meals and would be of less desirable quality on holidays than on school days.

The results are presented in Table 6.13 using the same groupings of categories as previously. With regard to Frequency of consumption, the figures indicate that proportionately more foods consumed on a "school-day" were reported by children who had also reported a "high frequency" of consumption. This contradiction with the hypothesis is significant at a probability level of less than .0001. The correlation between the day of consumption and the variable time is not as strong but is significant and indicates that proportionately more foods consumed on a "school day" were eaten "between meals" than at "meal time". Regarding the two aspects of Quality, the findings are not consistent. They show that there is no significant correlation between the day of consumption and the "recommended" versus "non-recommended" character of foods. However, the consumption of "C.T.N.-foods" is significantly correlated to the category "school day". So, apart from an absence of correlation between the "recommended" versus "non-recommended" character of foods and the variable day of consumption, the findings are again significantly in contradiction with the hypothesis.

The last variable thought to contribute to the dimension "availability" was the weekly money allowance. Clearly, the number and proximity of shops in the school environment would have very little influence on children's food consumption if they were not matched with a purchasing power. The data about pocket money obtained from the

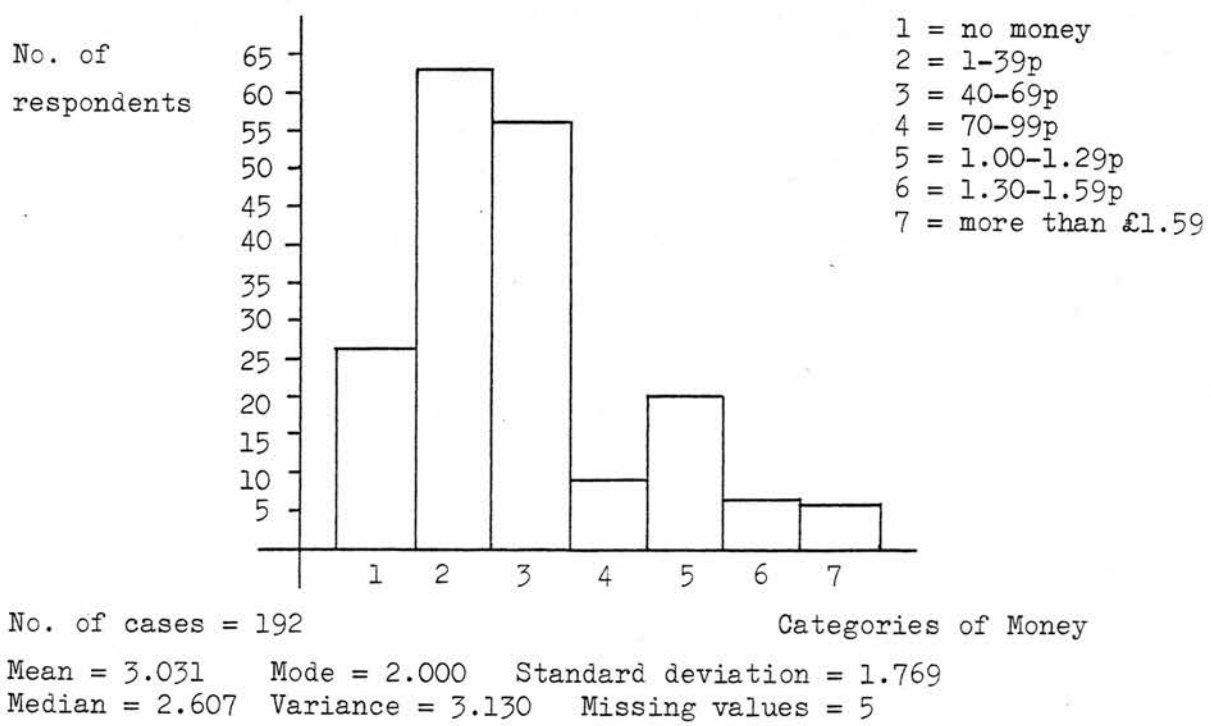
Table 6.13 Number of foods per category of frequency, time and quality of consumption reported by the respondents according to whether they had been eaten on a school day or a holiday.

VARIABLES	Categories \ Day of consumption	Holiday	School Day	Total	Chi-Square
FREQUENCY	Common Frequency	244	1307	1551	32.78
	High Frequency	68	818	886	1 d.f.
	Total	312	2125	2437	$p < .0001$
TIME	Meal Time	246	1525	1771	8.58
	Between Meals	62	595	657	1 d.f.
	Total	308	2120	2428[1]	$p < .01$
QUALITY	Recommended	138	877	1015	2.79
	Non-recommended	107	833	940	2 d.f.
	Mixed	67	415	482	
	Total	312	2125	2437	$p < .30$
	C.T.N. Foods	32	387	419	12.09
	Other Foods	280	1738	2018	1 d.f.
	Total	312	2125	2437	$p = .0005$

[1] Excluding 9 missing values.

24-hour-recall interviews were coded using the categories listed in Appendix XI. Figure 6.6 illustrates the frequency distribution of respondents per category of weekly money allowance (the number of cases corresponds to the number of respondents). The shape of the histogram indicates that the data is not normally distributed; the differences between the mean, the mode, and the median confirm this first impression. It looks as if the sample could be divided into three groups: children receiving no money at all, those receiving

Figure 6.6 Distribution of frequency per category of weekly money allowance.



around fifty pence, and finally the "rich ones" who get one pound or more. The cross-tabulation of all the categories of money by the schools attended, as seen in Table 6.14, shows that the four schools differ considerably in the amount of money that their pupils get. In the two "private" schools, the data cluster around low values i.e. most children get little money whereas in the two "depressed" schools, the distribution of cases is closer to the distribution of the whole sample with two peaks: a cluster of children receiving around fifty pence a week and another smaller group getting around one pound a week. The means are higher for the two "depressed" schools than for the two "private" ones, and it is interesting to notice that within each of these two categories, the mean of the school close to shops (H.P. for "high proximity") is higher than the mean of the other school (L.P. for "low proximity"). A one-way analysis of variance was done to test the significance of these differences and the findings are reported in Table 6.15. The F-ratio of 8.197 is significant at a probability level of less than .001. Thus the differences between the means described earlier are highly significant.

However, because the data are not normally distributed in the total sample as well as within each school, it was considered more appropriate to use the chi-square again. To this end, the categories of money were grouped as follows:

None	:	None
1 - 39p 40 - 69p 70 - 99p	)	Average
1.00 - 1.29 1.30 - 1.59 More than 1.59	)	Big

Table 6.14 Number of respondents per category of weekly money allowance according to the school attended.

Categories of money / School	None	1-39	40-69	70-99	£1-1.29	1.30-1.59	More than 1.59	Missing	Total
Priv. L.D. (Priv. L.P.)	8	23	15	0	0	0	0	0	46 $\bar{x}$ =2.15
Priv. H.D. (Priv. H.P.)	6	22	15	4	3	1	1	1	53 $\bar{x}$ =2.67
Dep. H.D. (Dep. L.P.)	3	10	15	2	11	0	1	2	44 $\bar{x}$ =3.29
Dep. L.D. (Dep. H.P.)	10	8	11	2	6	6	4	2	49 $\bar{x}$ =3.43
Total	27	63	56	8	20	7	6	5	192 $\bar{x}$ =3.03

Table 6.15 Analysis of variance of weekly money allowance between schools (excluding the 5 missing values).

Source of Variance	Sum of Squares	d.f.	Mean Squares	F. ratio
Between schools	69.150	3	23.050	8.197
Within schools	528.648	188	2.812	$p<.001$
Total	597.798	191	3.130	

The figure of one pound was chosen as the borderline between the "average" and "big" allowance on the basis of the shape of the histogram and on the basis of the standard deviation (1.769). The one-pound figure is a value corresponding roughly to one standard deviation above the mean (3.031). As the largest differences between means were for the "depressed" versus "private" schools, the four schools were grouped accordingly. The findings presented in Table 6.16 show that significantly more children attending the two "depressed" schools receive a "big" money allowance.

Table 6.16 Number of respondents receiving a big, average or no money allowance depending on what type of schools they attended (private versus depressed).

Types of schools \ Categories of money	None	Average	Big	Total
Private	14	79	5	98
Depressed	13	48	28	89
Total	27	127	33	187

N = 187, d.f. = 2, chi-square = 23.2859
$p < .001$, 5 missing values.

Concerning hypothesis no. 1, what is important to know is whether or not money has an influence on the Frequency, Time and Quality of consumption. The findings, presented in Table 6.17, indicate that such an influence exists and that it works in the expected direction.

Table 6.17 Number of children who had eaten six times or less (common frequency) or more than six times (high frequency) and number of foods per category of quality and time according to whether the respondent was getting a big, average or no money allowance (excluding missing values).

VARIABLES	Categories of money / Categories	None	Average	Big	Total
FREQUENCY	Common frequency	18	96	15	129
	High frequency	5	27	18	50
	Total	23	123	33	179
	chi-square = 14.252, 2 d.f. $p < .001$				
QUALITY	Recommended	135	678	179	992
	Non-recommended	103	598	216	917
	Mixed	58	318	96	472
	Total	296	1594	491	2381
	chi-square = 9.9626, 4 d.f. $p < .05$				
QUALITY	CTN-foods	51	259	96	406
	Others	245	1335	395	1975
	Total	296	1594	491	2381
	chi-square = 2.9042, 2 d.f., not significant				
TIME	Mealtime	220	1210	307	1737
	Between meals	72	380	184	636
	Total	292	1590	491	2373
	chi-square = 36.0239, 2 d.f. $p < .001$				

However, it is not statistically significant in all cases. According to these figures, children who get more pocket money also eat more often; proportionately more of the foods they reported were "non-recommended", and were consumed "between meals". These correlations were found to be statistically significant. Although proportionately more of the foods reported by the richest respondents were "C.T.N.-foods", this correlation is not statistically significant.

6.4.2.3. Discussion of findings in relation to hypothesis no. 1.

The findings from the inventory will be discussed separately from those obtained through the interviews.

6.4.2.3.1 Discussion of the findings obtained from the inventory.

The findings obtained from the inventory cannot be compared with those of previous research since nothing has been published on the number and nature of shops in school environments. The field work revealed that the size of area chosen (everything within one quarter of a mile around the school) is large. Also looking at the area included in a circle may not be the most valid approach; perhaps concentrating on main roads and bus stops would be better.

Without a recording of the actual movements of children in the school environment, their relationship with some elements of this environment can only be suspected. As an example of this, it can be assumed that the children attending the "depressed low density/high proximity" school are in much closer contact with their school environment (including the shops) than those attending the "private high density/high proximity" school. This assumption is based on the fact that most children attending the "depressed" school live in the same area and walk to and from school whereas the children attending

the "private" school live away from it. Another fact that probably has an implication on children's relationships with their school environment is whether or not they are allowed to leave the school grounds during school hours. It was mentioned earlier that this was forbidden in the "private" schools but not in the "depressed" ones. These two facts could lead to the conclusion that children attending the "depressed low density/high proximity" school were more exposed to environmental pressure than those attending the "private high density/high proximity" one except if we consider that perhaps many children attending the "private" school commute by bus. Going back to the map, we can see that these children would be heavily exposed given the location of the nearest bus stop and the business hours of the newsagent (C.T.N.) situated by the bus stop. Also, it must be remembered that the "private" school included a "tuck shop" accessible to primary level pupils at lunch time.

Finally, it was believed on the basis of the preliminary observations described in Chapter 1 that children avoid shops other than C.T.N.s and chip shops and the emphasis was put on these and their influence on consumption. However, this preference for C.T.N.s and chip shops remains an assumption.

6.4.2.3.2 Discussion of the findings obtained from the 24-hour-recall interviews.

It must be realized that the coding strategy of using foods instead of respondents as cases is likely to have had an influence on the statistical analyses. First, it brought the number of cases from 192 to over 2,000 thus creating an artificially large sample. The chi-square test, largely used in this study, is very sensitive

to an increase of the sample size as its value increases with a bigger sample and becomes more significant. Another effect of using foods as cases is that a few respondents having reported a number of foods larger than the average were likely to have a stronger impact on the findings than the other respondents. For example, it was mentioned at the beginning of this chapter that one respondent had reported 31 items and that his recall had nevertheless been included. This one case was artificially transformed into 31 cases whenever the analyses were done using foods as cases. One can easily appreciate the impact this respondent had on the results. Consequently, the results must be interpreted with caution and this warning is valid for all the analyses done using food items as cases.

Another aspect of the findings that deserves scrutiny is the negative correlation between the number of shops (density of school environment) and the Time and Quality of consumption. It was found that this negative correlation could be reversed into a positive one by using the concept of Proximity of shops rather than Density as an indication of availability. This was accomplished by simply reversing the position of two of the four schools i.e. the "depressed low density" school was renamed "depressed high proximity" while the "depressed high density" school became "depressed low proximity". As a result, the negative correlation is changed into a positive one between the school environment and two of the three variables of consumption retained. Clearly this reversal of conclusion is mostly attributable to the "depressed low density/high proximity" school. It is worth examining this fact more clearly.

The "depressed low density/high proximity" school differs from the three others with regard to the amount of pocket money its pupils

reported. Tables 6.14 and 6.15 show that the mean of the weekly money allowance was significantly higher for this school than for the three others. As it was found that the amount of pocket money is correlated to the Frequency, Time and Quality of consumption, the influence attributed to the environment in Table 6.12 is partly due to the size of allowances given to children. The weekly money allowance figures are comparable to those obtained by market researchers. The Walls Report, 1980 quotes figures of 59 pence for the 5-7 year olds, and 66 pence for the 8-10 year olds (see also the Carrick James Market Research, November 1980 figures in Chapter 1). Also, the mean of the number of items reported in each school is higher for the "depressed low density/high proximity" school as can be seen in the table below.

Table 6.18 Average number of food items reported per respondent in each school.

School	Number of items	Number of respondents	Mean
Priv. L.D./L.P.	577	46	12.54
Priv. H.D./H.P.	642	53	12.11
Dep. L.D./H.P.	689	49	14.06
Dep. H.D./L.P.	529	44	12.02
Total	2437	192	12.69

In conclusion, the findings indicate that the pupils who were attending the "Dep. L.D./H.P." school were probably more vulnerable to an influence from their environment than the other children.

They are likely to walk by a C.T.N. on their way to and from school and are allowed out of the school grounds. They also receive significantly more pocket money than the other children.

The relationship between school environment and some variables of consumption is supported by the fact that there is a significant correlation between the Day of consumption ("school day"versus "holiday") and the frequency, time and consumption of"C.T.N.-foods". This suggests that going to school puts children more at risk of eating "C.T.N.-foods" because of the environment they are exposed to on school days. Finally, it is important to point out the consistency between the conceptual basis of the hypothesis, the qualitative data reported in the inventory, and the results of the statistical analyses.

It was mentioned earlier that children attending the "depressed" schools were receiving significantly more pocket money than those attending the "private" schools. The next hypothesis originated from the belief that social class would influence various aspects of food consumption.

6.4.3 Analysis of findings in relation to hypothesis no. 2

Hypothesis No. 2: Social class of primary school children influences their food consumption.

The literature review indicated that social class is related to the quality of food consumption (The Black Report, 1980; Cook et al., 1973). Early observations, some of which are reported in Chapter 1, led the investigator to think that social class could also influence other aspects of food consumption such as the Frequency, Setting, Time of consumption and whether the child eats with adults or not. Although Wedge and Prosser (1973) questioned the belief

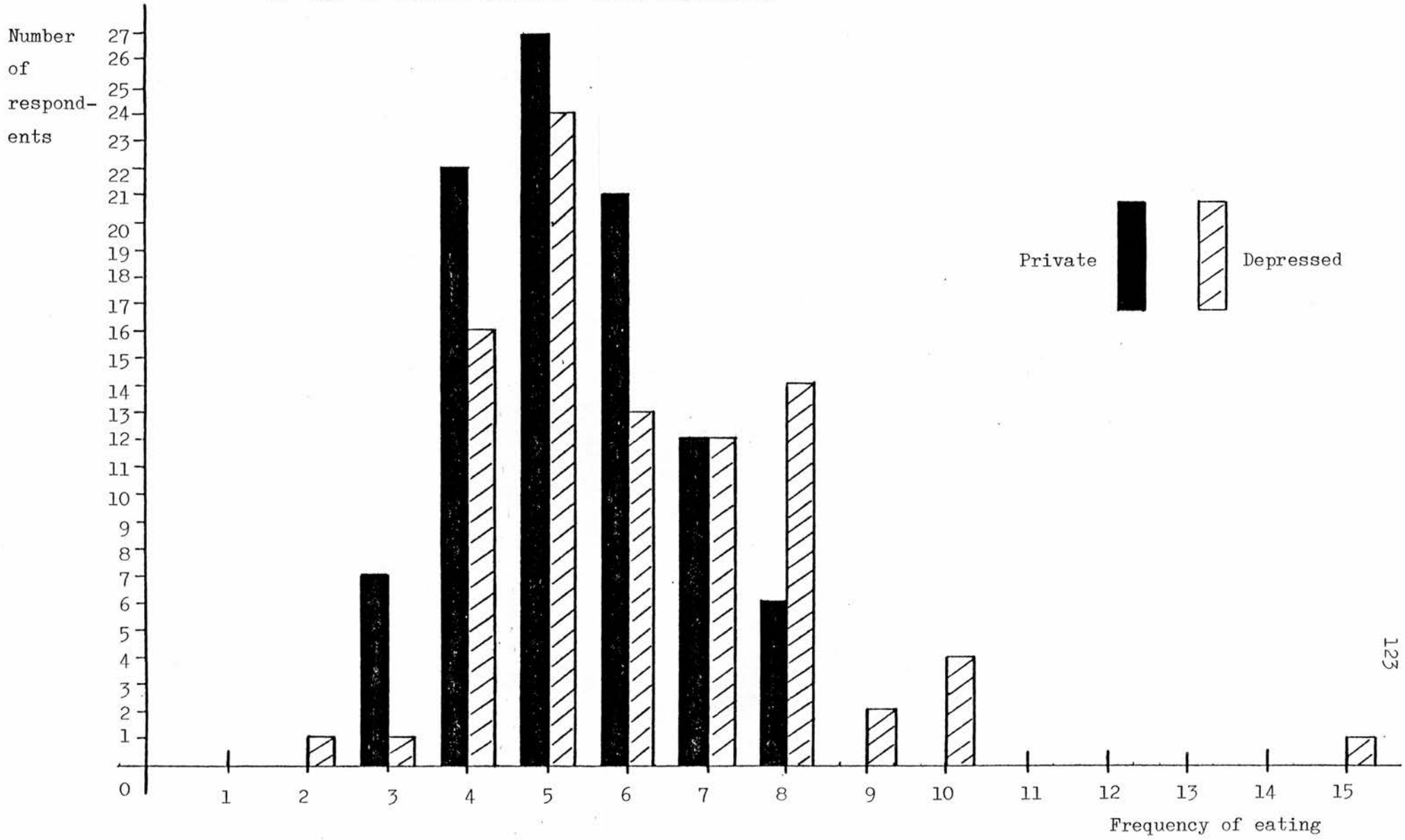
that children from lower socio-economic groups suffer from a lack of parental interest, the investigator felt that these children appeared to be less subjected to controls from their parents. If it is so, their food consumption is likely to be less structured than the consumption of more privileged children. Therefore, it was hypothesized that children attending the two "depressed" schools would eat more frequently, more often between meals, and outside their family home; it was also thought that a larger portion of their eating would occur in the absence of adults.

The findings will be presented first with respect to the variables of Patterns mentioned above and secondly, the influence of social class on various aspects of Quality will be examined.

6.4.3.1 Social class and patterns of eating.

Figure 6.7 illustrates the frequency distribution of the number of times food was consumed (frequency of eating) the previous day per type of schools ("private" versus "depressed"). It shows that no respondent from the "private" schools reported a frequency higher than 8 and that the respondents from those schools are normally distributed. In the "depressed" schools on the contrary, the distribution is irregular with extreme low and high values. These findings were explored further for differences between means and variances in the schools. Appendix XV summarizes this exploratory work. An analysis of variance was done to test the significance of the difference between the means of the two types of schools ("private" versus "depressed"). The results, reported in Table 6.19, show that this difference is highly significant, thus confirming the hypothesis that children attending schools in a depressed area eat more often than

Figure 6.7 Frequency distribution of the number of times food was consumed the previous day by type of schools (Private versus Depressed).



children attending a private school. However, as Appendix XV shows, the difference between the values of the variance in the four schools is so large that it appeared preferable to use a non-parametric test again. So, the chi-square test was used and the results are reported in Table 6.20.

Table 6.19 Analysis of the variance of frequency of eating between the two types of schools ("private" versus "depressed")

Source of Variance	Sum of Squares	d.f.	Mean Squares	F. Ratio
Between types of schools	29.73	1	29.73	10.58
Within types of schools	508.6	181[1]	2.81	$p < .001$
Total	538.33	182[1]	2.96	

[1] Excluding the 9 missing values.

As mentioned earlier, three other variables of patterns were thought to be influenced by social class: Time of consumption, Setting and whether the child eats in the company of adults or not. Table 6.20 summarizes the findings with regard to these three variables. The categories of Frequency and Time were grouped as in the previous tables. For the variable Setting, the categories "street/bus/school ground" and "school buildings" were grouped with "Other setting". For the variable Company, the categories "no company" and "with peers only" were grouped and re-named "child company" while the two remaining categories were re-named "adult company".

Table 6.20 Number of children who had eaten six times or less (common frequency) or more than six times (high frequency) and number of foods per category of time, setting and company according to the type of schools attended by the respondents (private versus depressed).

VARIABLES OF PATTERNS	Categories \ Types of schools	Private	Depressed	Total	Chi-Square
FREQUENCY	Common frequency	77	56	133	6.9771
	High frequency	18	32	50	d.f. = 1
	Total	95	88	183[1]	p < .01
TIME	Meal time	916	855	1771	7.3977
	Between meals	299	358	657	d.f. = 1
	Total	1215	1213	2428[1]	p = .0065
SETTING	Home	803	747	1550	34.5497
	Other home	19	74	93	d.f. = 2
	Other setting	393	392	785	
	Total	1215	1213	2428[1]	p < .0001
COMPANY	Child company	260	266	526	.1004
	Adult company	955	947	1902	d.f. = 1
	Total	1215	1213	2428[1]	p = .7513 not sign.

[1] 9 missing values.

The results show that social class, as inferred from the type of school attended, has an influence on the Frequency, Time and Setting of consumption but not on the Company. Children attending the "depressed" schools eat more frequently. This confirms the results of the analysis of variance reported earlier but it is worth reminding here the contribution of the "Dep. L.D./H.P." school to these findings (see Appendix XV).

Proportionately more foods reported by children attending the two "depressed" schools than by those attending the "private" schools had been consumed "between meals". Children attending the two "depressed" schools have also reported significantly more foods eaten in "other homes" and less foods consumed in their family home. Finally, social class does not appear to have any effect on whether the child eats in the company of adults or not.

6.4.3.2 Social class and quality of food consumption.

Other studies (The Black Report, 1980; Cook et al., 1973) have reported that socio-economically deprived children tend to consume less brown bread, fresh fruit and milk, and more carbohydrates (sugar, preserves, potatoes). As mentioned before, the quality of bread was not recorded in the present project but it was possible to evaluate the consumption of fruit, vegetables, milk, sweet foods and chips as recalled by the respondent. Table 6.21 reports the findings. The categories used in this table originate from those listed in Appendix X and grouped as follows:

Fruit:	pure fruit juice, fresh fruit.
Vegetables:	raw vegetables, cooked vegetables (chips were excluded).
Milk:	flavoured milk, unflavoured milk.

Table 6.21 Number of foods of various categories reported by respondents according to the type of schools attended (private versus depressed)

Categories of foods \ Types of schools	Private	Depressed	Total	Chi-square
Fruits	91	47	138	14.8328 d.f. = 1
Other foods	1128	1171	2299	
Total	1219	1218	2437	p = .0001
Vegetables	84	107	191	3.0256 d.f. = 1
Other foods	1135	1111	2246	
Total	1219	1218	2437	p = .0820
Milk	103	77	180	4.0332 d.f. = 1
Other foods	1116	1141	2257	
Total	1219	1218	2437	p < .05
Sweet foods	513	534	1047	.7689 d.f. = 1
Other foods	706	684	1390	
Total	1219	1218	2437	p = .3805
Chips	28	56	84	9.6903 d.f. = 1
(Potatoes other than chips)[1]	(46)	(59)	(105)	
Other foods	1191	1162	2353	
Total	1219	1218	2437	p = .0019

[1] Not included in the calculations.

Sweet foods: Cereals with milk and sugar, soft drinks or tea/coffee with sugar, flavoured milk, bread with sweet topping or filling, tinned fruit, biscuits, desserts, sweets and chews, lollies, bubble and chewing gum.

Social class as inferred from the type of schools attended is seen to influence the consumption of "fruits", "milk" and "chips". Children attending the two "private" schools have reported significantly more "fruit" and "milk" and less "chips". However, social class does not appear to have an influence on the consumption of "vegetables" and "sweet foods"; also, the value of the chi-square in the case of "milk"consumption is rather low.

Given the fact that school milk was available in the two "depressed" schools and that the school dinner was a set meal including one helping of meat (or substitute), two helpings of vegetables, and a dessert, it was thought that the contribution of the school to the consumption of vegetables and milk could be partly responsible for this lack of differences between social classes. Table 6.22 shows the consumption of vegetables by type of school broken down by setting. The category of setting "school buildings" was isolated from all other settings.

This table demonstrates that without the school dinner, respondents attending the two "depressed" schools would have reported a significantly lower consumption of vegetables than those attending the two "private" schools. On the contrary, children attending the two "private" schools seem to compensate at home for a very low consumption of vegetables at school.

Table 6.22 Number of foods in the category "vegetables" versus "other foods" reported by respondents from the two types of schools according to the setting of consumption (school or other).

SETTING	Categories of foods \ Types of schools	Private	Depressed	Total	Chi-square
SCHOOL	Vegetables	5	53	58	43.8556
	Other foods	231	189	420	d.f. = 1
	Total	236	242	478	$p < .0001$
OTHER	Vegetables	79	54	133	4.8517
	Other foods	904	922	1826	d.f. = 1
	Total	983	976	1959	$p = .0276$

Table 6.23 illustrates the contribution of the school milk programme on the consumption of milk by children. It shows that the significantly higher consumption of milk by children attending the two "depressed" schools when they are at school is strikingly reversed when they are not in school (i.e. if the school milk is excluded).

The overall effect of social class as estimated by the type of school attended on the quality of food consumption is seen in Table 6.24. The three categories of foods ("recommended", "non-recommended" and "mixed") used in this table were described earlier (p.106). According to this table significantly more "non-recommended" than "recommended" or "mixed" foods had been consumed by the pupils attending the two "depressed" schools than by those attending the "private" schools.

Table 6.23 Number of times consumption of milk was reported in each type of school depending on the setting of consumption (school versus other setting).

SETTING	Types of schools / Categories of foods	Private	Depressed	Total	Chi-square
SCHOOL	Milk	17	44	61	12.9350
	Other foods	219	198	417	d.f. = 1
	Total	236	242	478	p = .0003
OTHER	Milk	86	33	119	24.7303
	Other foods	897	943	1840	d.f. = 1
	Total	983	976	1959	p < .0001

Table 6.24 Number of recommended, non-recommended and mixed foods reported by the respondents according to the type of school attended (private versus depressed).

Type of schools / Categories of foods	Private	Depressed	Total	Chi-square
Recommended	523	492	1015	9.4786
Non-recommended	435	505	940	d.f. = 2
Mixed	261	221	482	
Total	1219	1218	2437	p = .0087

6.4.3.3 Discussion of findings in relation to hypothesis no. 2.

Table 6.20 which shows that children attending the two "depressed" schools had eaten more frequently and had reported more food consumed "between meals" must be examined in conjunction with Table 6.13 (p.116). This latter table reported that children eat more frequently and more "between meals" on "school days" than on "Sundays/holidays". This is important to point out considering the fact that the number of foods reported by children attending the two types of schools is not equally distributed with regard to the day of consumption. The figures appearing in Table 6.25 show that, of all the food consumed on a "Sunday/holiday", more than twice as many were reported by the children from the two "depressed" schools.

Table 6.25 Number of foods consumed on a school day as opposed to a holiday according to the type of school attended by the respondent.

Day of consumption \ Types of school	Private	Depressed	Total	Chi-square
Sunday or holiday	92	220	312	60.3468
School day	1127	998	2125	d.f. = 1
Total	1219	1218	2437	$p < .001$

This indicates that the influence of social class on Frequency and Time of consumption is underestimated in Table 6.20.

The positive correlation between the fact of attending a school in a "depressed" area and having reported more foods consumed

in a home other than one's own home is an interesting aspect of Patterns of consumption among underprivileged children. Not only is their family home close to their school but often one or more of their relatives live in the area. Several children from those schools reported having eaten in "Granny's house" the day before. It can be reasonably assumed that these close family ties reinforce the cultural values related to food and eating.

The absence of correlation between the variable Company and the Type of schools attended indicates that children from the two "depressed" schools were not less supervised by adults at the time of eating than their more privileged counterparts. Matched with the findings related to Frequency and Time of consumption, this particular fact suggests that in underprivileged segments of the population, not only children but adults as well eat more frequently and more often "between meals". Therefore, the Patterns of eating of underprivileged social classes appear to be less structured than those of the privileged strata of the population. This is consistent with the historical evolution of table manners which have originated in the upper classes of European societies to gradually extend to lower classes (Farb and Armelagos, 1980). This aspect of food consumption has not been studied by the researchers applying the theory of social differentiation to food consumption; they have focused on the quality and diversity of the diet. It can be assumed that the degree of structure of eating patterns would be linked to the complexity of the diet. As reported in the review of literature, it has been found that underprivileged social classes have less complex food intakes (Beaudry-Darisme, 1972; Chassy et al., 1967).

Regarding the Quality of consumption, the findings are consistent with previous studies in that they confirm the already known trends: underprivileged children consume less fruit, vegetables (unless they eat the school dinner), and milk, but more potatoes (chips) than their more privileged counterparts. A higher consumption of potatoes among the poor is another heritage from history. Salaman (1949) documented how this vegetable, which had previously been rejected as food for the pigs, became the survival food in Scotland following the Clearances. Thereafter it has remained associated with poverty.

The findings of the present research indicate that social class does not influence the consumption of "sweet foods". This apparent contradiction with studies quoted earlier which claim that social classes IV and V eat more sugar and more preserves can be explained by the fact that these previous studies may have excluded certain sweetened foods such as home-made biscuits, flavoured yoghurt or bread spread with honey. In the present study, the category "sweet foods" refers to all sweetened foods. It is worth noticing that while the school dinner brings the underprivileged children in line with privileged ones with regard to the consumption of vegetables, the school milk programme does not have such a strong positive effect on the consumption of milk.

In addition to their statistical limits stated earlier, these findings must be interpreted with caution due to the sampling and data collection methods used. First, using the fact of attending a particular type of school as an indicator of the respondent's social class is questionable. In that respect, it is important to point out that the "private high density/high proximity" school was founded,

centuries ago, specifically to provide education free of charge to male orphans, a tradition the school is known to have maintained to this day. The other "private" school does not have this special vocation and also charges slightly higher tuition fees. If the respondents from the two "private" schools were possibly different with regard to their socio-economic status, the same possible distinction is less likely to have occurred in the underprivileged group. Living in the same underprivileged area and attending very similar schools, these children constituted a homogeneous group with regard to their socio-economic status. The fact that the findings support those studies which have examined similar aspects of food consumption suggests that the two types of schools chosen were valid indicators of the social class of their pupils.

Another limit of the findings is the fact that the quality of the food consumption was assessed from only one recall and this method is not considered reliable by nutritionists. It was mentioned that specific probing was used for the school milk after the first week following the realization that very few children were reporting it if not probed. It is likely that many items were not recalled particularly from younger respondents. Therefore, there is probably an overall underestimation of the food consumed.

Finally, as it was not the objective of this study to measure the adequacy of children's nutrition, their food intake was not quantified in order to compare it to standards. As a result, no statement can be made of the adequacy of the nutrition of any of the groups concerned. Hence, the fact that children attending the two "private" schools were found to have consumed more fruit and milk than those attending the two "depressed" schools does not mean that their

consumption of these two categories of food is sufficient nor does it mean that the intake of the underprivileged groups is inadequate. Only proper nutrition surveys can draw that kind of conclusions.

Up until now the analysis of findings has focused on the influence of factors that are not specific to children i.e. the physical environment and social class. To learn about children's eating as it contrasts with adults' eating, it is necessary to examine the foods they consume and how they eat. This will be the focus of the rest of the analysis.

6.4.4 Analysis of findings in relation to hypothesis no. 3

Hypothesis no. 3: The patterns of eating of primary school children differ depending on whether they eat alone, with their peers, or in the company of adults.

This hypothesis originated from the observation, supported by James' study (1979), that children do not seem to share with adults a concern for manners when they eat. Instead they were seen to manipulate foods and play with them in ways unacceptable to adults, eating practically anywhere (in streets, buses, playgrounds) and at any time of the day. According to the theoretical framework of the present study, children share a set of values which differ from the values of adults, and this difference should be reflected in their eating as in any of their activities. In other words, "children's eating" should contrast with "adult's eating".

The hypothesis, as formulated, implies that "children's eating" corresponds to all food consumption done by children when they are alone or with their peers while "adults' eating" refers to all consumption done by children in the company of adults. It is based

on the assumption that, when left on their own, children are free to disregard the use of dishes and utensils, to eat anywhere and at any time of the day. The limits of this assumption and of the definition of children's eating stemming from it will be discussed later together with the discussion of the findings.

6.4.4.1 Findings in relation to hypothesis no. 3.

In a first step, the method used to find the categories of Use, Setting and Time pertaining the children's eating will be described followed by the testing of correlation between the grouped categories and the variable Company. Then the effect of sex and age on each variable of Patterns will be examined.

A cross-tabulation of all categories of Use by the variable Company is presented in Appendix XVI-A. This table shows that considerably more food eaten in the company of adults (with or without peers also present) is consumed using at least one utensil and/or dish. In comparison, most of the foods eaten by children when they are alone or with peers are consumed without using anything. The number of food items consumed in different categories of Setting by category of Company appears in Appendix XVI-B. Foods eaten in the presence of adults (with or without peers also present) are seen to be almost always consumed in homes or in school buildings. Although a large number of items eaten by children when they are alone or with peers are consumed in their own home, this number remains small in relation to the foods eaten in the presence of adults at the child's home. Finally, Appendix XVI-C reports the number of foods consumed at different times of the day by category of Company. It shows a clear tendency for foods eaten in the company of adults

to be consumed at "breakfast", "lunch", "dinner" and "bedtime" i.e. at mealtimes. However, foods consumed by children when they are alone or with peers are not as clearly distributed. Apart from the category "morning", all the other categories of time get a relatively small share of the items consumed by children alone or with peers.

The tendencies of certain categories of Use, Setting and Time to match the fact of eating in the presence of adults or not became the basis for establishing groups of categories of each of these variables that were typical of adults' eating as opposed to children's eating. The theoretical framework also guided the decision when tendencies were not clear cut as in the case of the variable Time here. Table 6.26 shows how these groupings of categories of Use, Setting and Time correlate with the fact of eating in the presence or absence of adults. Overall, foods eaten in the absence of adults are consumed without any use of dish, container or utensil, in relatively unstructured settings (street/bus/school grounds, etc....), and mostly "between meals". It must be pointed out here that the category "container/dish" excludes the container or dish in which an item is normally sold (e.g. the plastic cup of a Tip Top drink).

It was thought that the sex of the respondents could have an effect on their patterns of eating. Figure 6.8 shows that the percentage of foods consumed without the use of anything or just using a container/dish is slightly higher for girls than for boys. For the two other variables of Patterns, the differences between girls and boys were negligible and not reported here.

Table 6.26 Number of foods per category of use, setting and time depending on whether the item had been eaten in the absence or presence of adults (excluding the missing values).

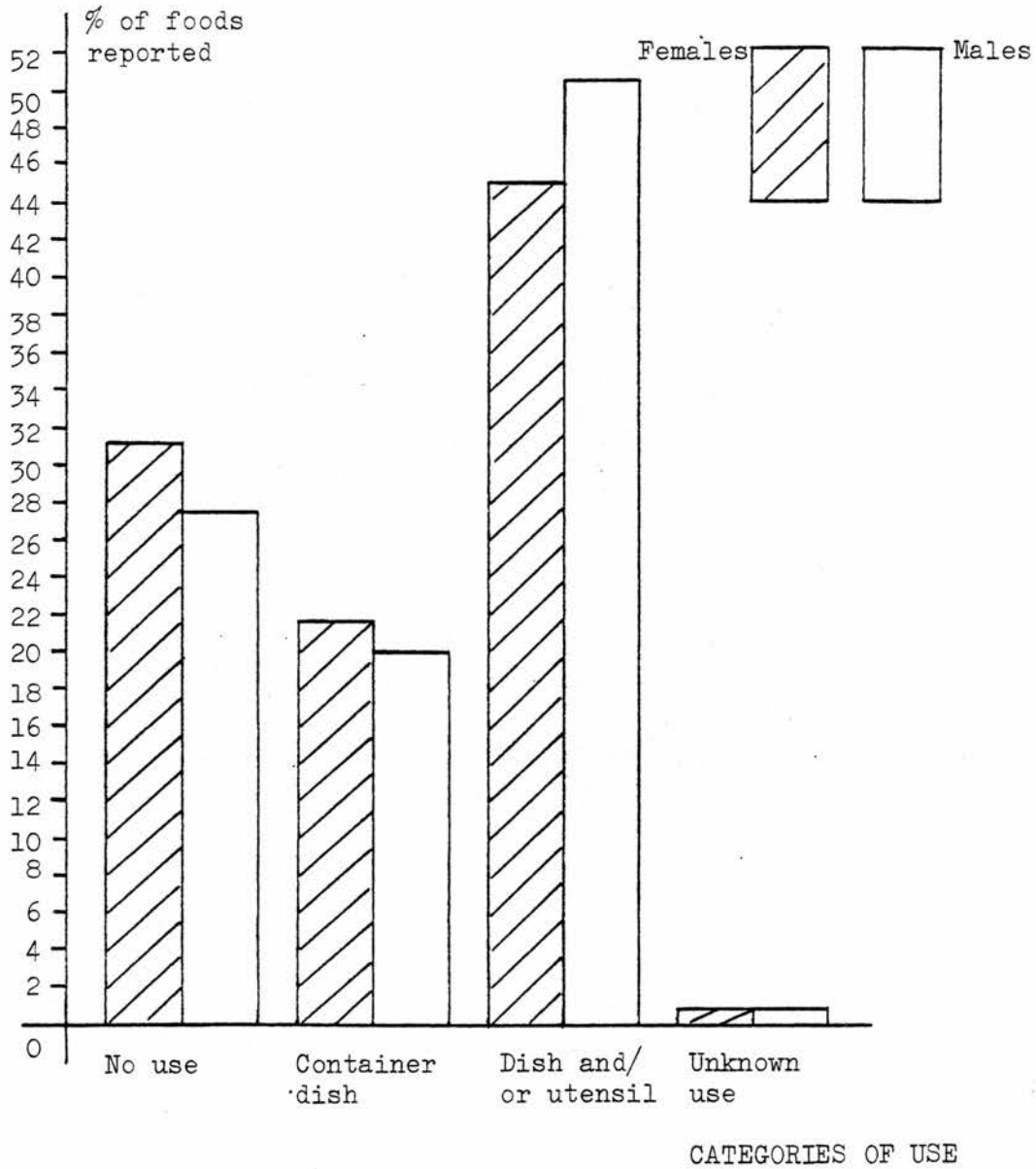
VARIABLES	Patterns \ Company	Alone or with peers (children's eating)	With adults (adults' eating)	Total	Chi-Square
USE	No use	361	363	724	483.21
	Container/Dish	59	453	512	d.f.=2
	Utensil and/or dish	105	1077	1182	p< .001
	Total	525	1893	2418	
SETTING	Home/School[1]	239	1882	2121	1068.34
	Out[2]	287	20	307	d.f.=1
	Total	526	1902	2428	p< .001
TIME	Mealtime[3]	202	1569	1771	226.79
	Between meals	324	333	657	d.f.=1
	Total	526	1902	2428	p< .001

1 This category includes "Child's home", "Other homes" and "school buildings".

2 This category includes "street/bus/school grounds" and "other settings".

3 This category includes "bedtime".

Figure 6.8 Percentage of foods reported by females and males per category of use of utensils and/or dishes.



Age was another variable thought to be related to Patterns of eating. All the values of age were grouped and labeled as below:

4, 5 and 6 year old respondents:	Juniors
7, 8 and 9 year old respondents:	Middle aged
10, 11 and 12 year old respondents:	Seniors

These groupings were established on the basis of the findings obtained from cross-tabulations of the variables of Patterns by each age category. These tables, too space-consuming to be included here, indicate differences in the Patterns of eating of the respondents grouped as above with regard to their age. These groupings of age categories are also consistent with developmental stages identified by Blair and Burton (1951) although other psychologists group the ages 6 through 12 together and refer to the period as "middle childhood" (Helms and Turner, 1981).

Table 6.27 reports the figures obtained when the variable age is cross-tabulated against the three variables of Patterns. It shows that children aged 7, 8 or 9 years ("middle aged") have reported proportionately more foods consumed "out", "between meals" and without the use of dishes and utensils, than the respondents of the other age groups. These differences are all significant.

6.4.4.2 Discussion of findings in relation to hypothesis no. 3.

It is interesting to examine in the light of the historical evolution of table manners the fact that significantly more foods eaten by children when they are unaccompanied by adults are consumed either without using anything or using only a container/dish. Fard and Armelagos (1980) documented how table manners have changed radically after the Middle Ages in Western Europe:

Table 6.27 Number of foods per category of use, setting and time depending on whether the item had been reported by a junior, middle aged or senior child (excluding the missing values).

VARIABLES	Age / Patterns	Juniors	Middle Age	Seniors	Total
USE	No use	160	366	190	716
	Container/Dish	135	266	109	510
	Utensil and/or Dish	296	537	342	1175
	Total	591	1169	641	2401
	Chi-square = 14.6268, d.f. = 4, $p < .01$				
SETTING	Homes/school[1]	535	997	575	2107
	Out[2]	63	175	66	304
	Total	598	1172	641	2411
	Chi-square = 11.1851, d.f. = 2, $p < .01$				
TIME	Mealtime[3]	474	808	480	1762
	Between Meals	124	364	161	649
	Total	598	1172	641	2411
	Chi-square = 26.8282, d.f. = 2, $p < .001$				

1 This category includes "Child's home", "Other homes", and "School buildings".

2 This category includes "Street/bus/school grounds" and "Other settings".

3 This category includes "Bedtime".

> Feudal lords used their unwashed hands to scoop food from a common bowl and they passed around a single goblet from which all drank.(---) Soups and sauces were commonly drunk by lifting the bowl to the mouth; several diners frequently ate from the same bread trencher.
>
> By about the beginning of the sixteenth century, table manners began to move in the direction of today's standards. The importance attached to them is indicated by the phenomenal success of a treatise, 'On Civility in Children', by the philosopher Erasmus, which appeared in 1530; reprinted more than thirty times in the next six years, it also appeared in numerous translations.
>
> (p.204)

Farb and Armelagos argued that changing table manners were just a part of a fundamental shift in society:

> People no longer ate from the same dish or drank from the same goblet, but were divided from one another by a new wall of constraint. Once the spontaneous, direct, and informal manners of the Middle Ages had been repressed, people began to feel shame. Defecation and urination were now regarded as private activities; handkerchiefs came into use for blowing the nose; nightclothes were now worn, and bedrooms were set apart as private areas. Before the sixteenth century, even nobles ate in their vast kitchens; only then did a special room designated for eating came into use away from the bloody sides of meat, the animals about to be slaughtered, and the bustling servants.
>
> (p.205)

These two excerpts demonstrate that adults have not always displayed the good manners they are now trying to inculcate into children who would be happier with the "spontaneous, direct, and informal manners of the Middle Ages". Regarding utensils, Farb and Armelagos showed how the knife was the earliest one to be used to manipulate food (to carve meat) and how "good table manners in Europe gradually removed the threatening aspect of the knife from social occasions" (p.207). According to the same authors, the fork

first appeared in Europe towards the end of the Middle Ages and among members of the upper classes. Gradually, from the sixteenth century onward, utensils began to proliferate and were used "to spare diners from the 'uncivilized' and distasteful necessity of picking up food and putting it into the mouth with the fingers" (p.207).

James' description (1979) of how children eat "kets" bears a striking resemblance with eating manners of the Middle Ages:

> The frequent examination of each other's tongues during the process of eating "kets", together with the other eating techniques required to consume them, manifest a rejection of the mannered and ordered conventions of adult society. The joy with which a dirty finger probes the mouth to extract a wine gum contrasts strongly with the need for a tooth pick to perform a comparable operation at the table.
>
> (p.90)

According to Farb and Armelagos, however, this neglect of manners is sometimes acceptable to adults:

> Only under special conditions - as when Western people consciously imitate an earlier stage in culture at a picnic, fish fry, cook out, or camp-fire - do they still tear food apart with their fingers and their teeth, in a nostalgic reenactment of eating behaviors long vanished.
>
> (p.208)

These special eating events are particularly interesting because they combine a neglect of table manners with an unstructured setting and it is well known that children love these events. The data reported in Table 6.26 support this belief that children prefer to eat in unstructured settings (streets/buses/school grounds, other settings) than in homes or in schools. The observation, reported in Chapter 1, that wastage was rarely seen among children

when they were given foods that they could manipulate directly with their hands is consistent with these data. The incident, also described in Chapter 1, of the girl eating chips bought in a chip shop is a vivid illustration of "Middle Ages-style" eating.

The fact that proportionately more foods eaten in the absence of adults were consumed between meals comes as no surprise. It could be viewed as partly responsible for the kind of settings and the non-usage of dishes and utensils that, as argued here, are typical of children's eating. However, this contention does not resist a comparison between the teachers' morning break and the pupils' morning break both taken at the same time (between meals) and within the school setting. Whilst most of the teachers use, at least, a cup and a spoon to have their coffee, sitting in a quiet room, the pupils eat their crisps or sweets with their bare hands, outdoors. Goodman (1970) pointed out how the opportunity to eat between meals was seen as a sign of freedom by M. Schmidt who, in his autobiography, contrasted the exciting way of life of Mexican-American children with his own restricted life (p.60).

On the basis of the data presented, sex does not appear to have a significant influence on patterns of eating. Age, on the other hand, was seen to influence them with "Middle-aged" children (i.e. 7, 8 and 9 year olds) being the most "childish" food consumers. Perhaps the "juniors" are still too subjected to their parents' authority to enjoy the same freedom. At the other extreme, the "seniors" (i.e. 10, 11 and 12 year olds) might be integrating an adult model into their patterns of eating.

While discussing hypothesis no. 1, pocket money was said to

be related to frequency and time of eating. It is important to point out that, as can be seen in Table 6.28, "middle-aged" children did not report bigger money allowances than the other groups. Although the difference was not significant at the probability level of .05, more respondents in the two other age groups reported "big" allowances. So, the correlation between the "middle-aged" group and patterns of eating typical of children is not attributable to the amount of pocket money they receive.

Table 6.28 Number of children who reported big, average or no money allowance according to the age group to which they belonged.

Money \ Age	Juniors	Middle aged	Seniors	Total
None	18	6	3	27
Average	59	41	27	127
Big	16	5	12	33
Total	93	52	42	187

Chi-square = 9.43, 4 d.f., not significant,
5 missing values.

In conclusion, the data presented here support the hypothesis, and further suggest that as a part of their own culture, children share typical patterns of eating. These patterns can be qualified as being "anti-meal". A definition of meals by Douglas (1975) summarizes the reasons why meals are not quite compatible with children's eating:

> Meals properly require the use of at least one mouth-entering utensil per head, whereas drinks are limited to mouth-touching ones. A spoon on a saucer is for stirring, not sucking. Meals require a table, a seating order, restriction on movement and on alternative occupations.
>
> (p.255)

With regard to the ultimate goal of this research, the findings presented up to now provide some indications for intervention in terms of target groups and of setting and time in which the interventions should fit. The data related to the variable "use" suggests that the foods likely to be acceptable to children must not require the use of dishes and utensils, but what other characteristics should these foods possess? Answering this question was the concern behind hypothesis no. 4.

6.4.5 Analysis of findings in relation to hypothesis no. 4

Hypothesis no. 4: The characteristics of foods that children eat alone, or in their peers' company, differ from the characteristics of the foods they eat in adults' company.

This hypothesis also originated from observations of children's eating and from the literature review. The distinctions between "children's foods" and "adults' foods" did not appear as obvious as the contrasts between the patterns of eating of children as opposed to those of adults. So, a description of the procedure used to identify these contrasts will first be given.

6.4.5.1 Findings in relation to hypothesis no. 4.

The procedure followed to identify the groupings of the various categories of the variables Taste, Texture, Temperature, Shape, Size of portion, and Visual aspect comes close to the procedure used in the previous section. In a first step, the number of cases

in each category of each variable was cross-tabulated against two categories of Company: "Alone or with peers" and "with adults". In the absence of a clear theoretical basis to identify the categories of variables typical of children's foods as opposed to adults' foods, the expected values were calculated for each cell. The discrepancies between observed and expected values guided the choice. These cross-tabulations appear in Appendix XVII-A through F. The categories of each variable were grouped as described below.

Taste: "Mint", "Chocolate", and "Salt and Vinegar" clearly belong to children and can be referred to as "strong tastes". "Savoury" and "Other" can be identified with adults' foods, bearing in mind that bland foods such as a hard-boiled egg, beans and most vegetables were classified under this latter category. "Sweet" and "Fruity" foods are more problematic and were kept separately.

Texture: "Hard", "Effervescent" and "Crispy" are clearly dominant in foods eaten by children when they are alone or with peers. Foods consumed with adults are more often "Liquid", "Semi-liquid", or "Soft". In the category "Chewy", the observed values are close to the expected ones. It is important to mention here that all kinds of meat were classified as "Chewy" except minced meat.

Temperature: Foods at "Room Temperature" or "Frozen" are associated with children's eating whereas "Hot/Warm" or "Cold" foods are typical of adults' eating.

Shape: "Long cylinder/rectangle", "Spherical/round flat", "Animal/Human/Monster", and "Bottle/Can" shapes belong to children's foods. Foods having "Other" or "No shape" are quite clearly associated with

adults' eating. In the two other categories ("Cubic/square/rectangular flat" and "Carton") the number of observed cases comes very close to the expected values. The first of these two categories included all slices of bread and sandwiches.

Size of portion: Children's foods are not bigger than a "mouthful" or come into a "packet" whereas adults' foods come into portions "bigger than a mouthful".

Visual aspect: Apart from the "unwrapped appealing to adults" category, all other categories of visual aspect match with children's foods. However, the theoretical framework is more definite regarding this particular variable and it had to be put to the test. Therefore, the categories were grouped as follows:

Children's foods: "unwrapped, appealing to children", "wrapped, appealing to children".
Adults' foods: "natural", "unwrapped, appealing to adults", "wrapped, appealing to adults".

Table 6.29 and 6.30 report the findings grouping the categories as mentioned above. The hypothesis is supported for each variable of the dimension "characteristics" with p-values of less than .001 in each case.

6.4.5.2 Discussion of the findings in relation to hypothesis no. 4.

With regard to the variable taste, the findings support James' conclusion that children's foods have "strong" tastes. Although the measurement and coding method used here did not allow for the subtle distinctions in various tastes that James described, the overall trend is clearly present. "Sweet" and "Fruity" foods are also

Table 6.29 Number of food items per grouped categories of Taste, Texture and Temperature depending on whether the item had been eaten in the absence or presence of adults.

VARIABLE	Characteristics \ Company	Alone or with peers	With adults	Total	Chi-Square
TASTE	Mint; Chocolate; Salt and vinegar	102	120	222	125.1132
	Savoury; Other	167	1021	1188	d.f. = 2
	Sweet; Fruity	252	749	1001	p < .001
	Total	521	1890	2411[1]	
TEXTURE	Hard; Effervesc. Crispy	255	361	616	206.6401
	Liquid; ½ liquid; Soft	183	1239	1422	d.f. = 2
	Chewy	82	288	370	p < .001
	Total	520	1888	2408[1]	
TEMPERATURE	Room Temp; Frozen	375	634	1009	242.4204
	Hot/warm; Cold	150	1256	1406	d.f. = 1
	Total	525	1890	2415[1]	p < .001

[1] All missing values were excluded.

Table 6.30 Number of food items per grouped categories of shape, size and visual aspect depending on whether the item had been eaten in the absence or presence of adults.

VARIABLE	Company / Characteristics	Alone or with peers	With Adults	Total	Chi-square
SHAPE	Appealing shapes[1]	190	390	580	110.79
	No shape; Other	190	1118	1308	
	Cubic/square/ rect flat; carton	77	283	360	d.f. = 3
	Unknown shape	69	111	180	
	Total	526	1902	2428	$p < .001$
SIZE	Packet; Mouthful or <	284	685	969	56.69
	Bigger than mouthful	235	1196	1431	d.f. = 2
	Unknown size	7	21	28	$p < .001$
	Total	526	1902	2428	
VISUAL ASPECT	Appealing to children[2]	132	186	318	190.56
	Natural; appealing to adults	328	1666	1994	d.f. = 2
	Unknown visual aspect	66	50	116	
	Total	526	1902	2428	$p < .001$

[1] Long cylinder/rectangle; Spherical/round flat; Animal/ Human/Monster, Bottle/can.

[2] Unwrapped or wrapped appealing to children.

seen to be popular among children. It must be pointed out that all fruit-flavoured sweets were coded "Fruity". Therefore it is not surprising to find a larger than expected number of foods in this category which had been consumed by children while alone or with their peers (see Appendix XVII-A). The number of "Sweet" foods (see same table) is close to the expected values indicating that sweetness is not typical of children's foods but rather a universally appreciated quality. Goodman (1970) found that sweets were highly valued by children of different ethnies. Pfaffmann (1977) wrote that "our 'sweet tooth' is built into our nervous system and is of an evolutionary origin." (p.84) Yudkin (1972) also considered this inclination towards sweet foods as natural, pointing out that, in the past, man used to satisfy this desire by eating fruit or honey.

Children's foods also have specific textures: "Hard", "Effervescent" or "Crispy". These data also support James' description of fizzy "kets" which provide a "unique digestive experience" (p.87) or "chews" that "produce an aching jaw - reminiscent of eating tough meat" (p.90). The liking of crispy and crunchy textures explains Breckenridge's findings that children prefer raw vegetables and raw fruits to cooked or canned ones (Breckenridge, 1959).

Regarding the variable temperature, it is difficult to interpret the findings as this variable has not been discussed in the literature on children's food preferences. In the case of "frozen" foods, a possible explanation is the hard texture of these foods. However, the total number of these foods (see Appendix XVII-C) is so small that it appears more realistic to associate children's foods with "room temperature" only. On the other hand, the data collection

period (October and November) may very well have had an influence on that variable, reducing the likelihood of consumption of frozen foods.

In examining the influence of some categories of shape, one must bear in mind that all chips and sausages were coded "long cylinder/rectangle" thus classifying them with many sweets shaped alike. Obviously, however, the cylindrical shape of sausages and the long rectangular shape of chips is far from being as geometrically clear and as attractive as similar shapes of some sweets and chews. This way of coding was somewhat unfair to the hypothesis thus making the results more meaningful. The figures reported in Appendix XVII-D support James' observation that "Animal/Human/Monster"-shaped foods belong to the world of children. It is interesting to link the fact that children's foods were found to be "smaller than mouthful" or "packet size" with Dyson-Hudson's study of food-sharing among young children and the role it plays in their social interactions (Dyson-Hudson, 1972). Small pieces of foods that come into a packet are more suitable for sharing than big foods.

Finally, the visual qualities of foods judged to be appealing to children are seen to produce the expected effect in Table 6.30. However, an examination of Appendix XVII-F calls for a less categorical conclusion. This appendix shows that, in fact, the number of wrapped foods (appealing to children or not) consumed by the respondent "alone or with peers" is much larger than the expected values. This contradicts James' view that "kets" (i.e. what she sees as children's foods) are frequently unwrapped. A more surprising aspect of these findings is the unexpectedly large number of "natural" foods consumed in the absence of adults.

Table 6.30 presents for each variable the number of cases for which no value was recorded (the "unknown" values). These numbers are generally large. It must be realized that, had the variable been measured in all cases, the conclusions might have been different. The difficulty and subjectivity of the measurement constitute a serious limit of these findings. It is in that perspective that hypothesis no. 5 was formulated in order to measure more objectively the effect of at least one variable: the visual qualities of foods.

6.4.6 Analysis of findings in relation to hypothesis No. 5

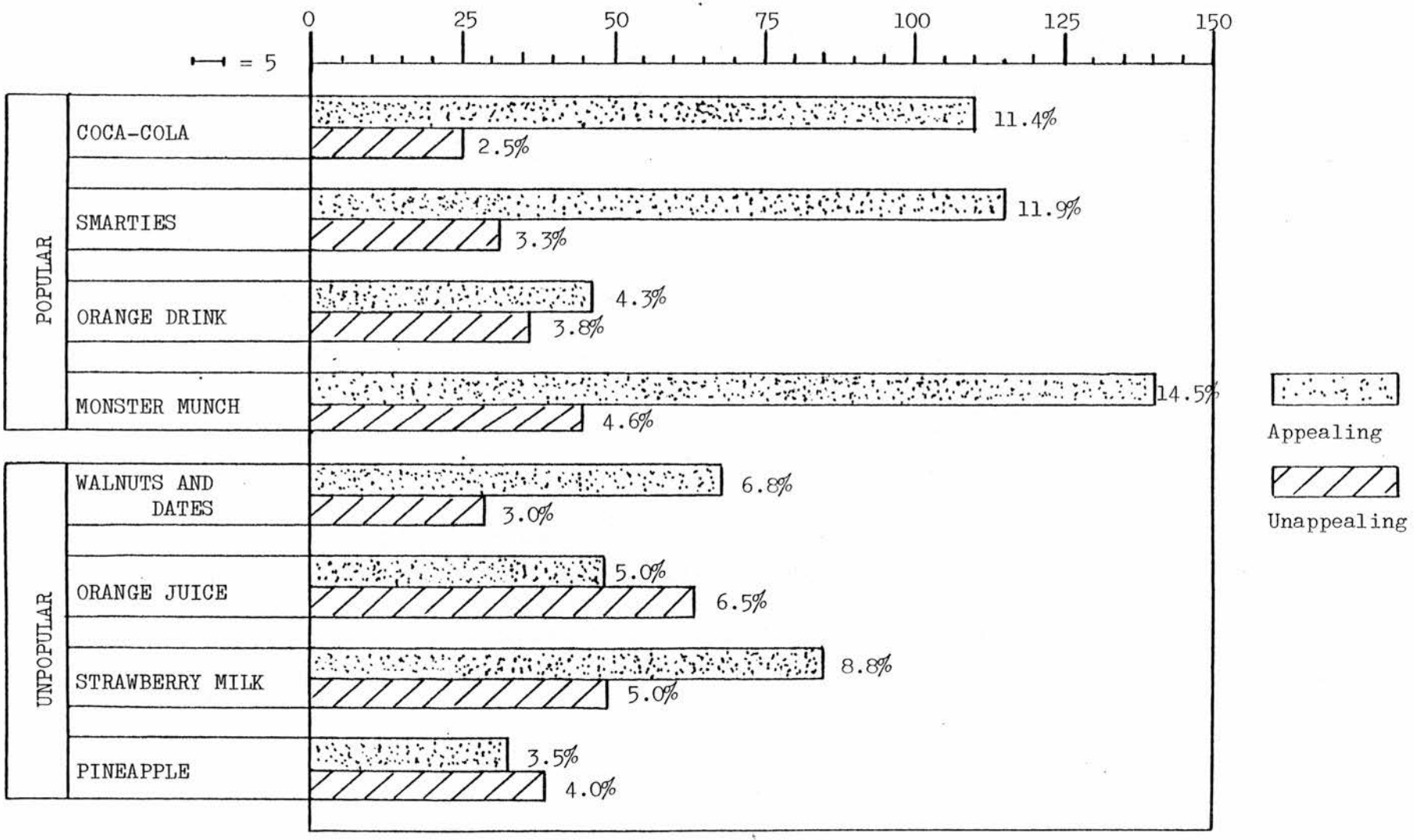
Hypothesis No. 5: Presented with a series of photographed foods, children tend to choose the items visually more appealing regardless of their nature.

6.4.6.1 Findings in relation to hypothesis No. 5.

The findings will be presented in terms of the score obtained in each step of the game by each food item. No statistical test was done to measure the significance of the differences between the appealing and unappealing form of each food because, due to the design of the game, more than one variable could intervene in the respondent's choice. For example, at each step the child had to debate not only between a "Superman" packet of walnuts and dates and a dull "whole-food style" small bag of the same food but she/he also had to decide whether she/he wanted crisps, a drink, chocolate or fruit.

Figure 6.9 illustrates the distribution of the scores obtained by each food in its appealing and unappealing form in step one of the game. It shows that, when deprived of their appealing packaging, the popular foods were much less often chosen. The orange drink constitutes an exception

Figure 6.9 Scores obtained by each food in its appealing and unappealing form in step one of the game. (Also expressed in percentage of the maximum score of 960)



in that the visual aspect makes little difference; this food appears much less desirable than the three other popular ones, whether it is visually appealing or not. With the unpopular foods, the findings are contradictory. The walnuts and dates "sell" much better in the "Superman pack" than in the dull transparent bag; so does the strawberry milk in its monster-shaped container. However, the 'squizzy' bottle as opposed to the carton of orange juice and the pineapple lolly contrasting with the bowl of pineapply chunks did not produce the expected effect.

The scores obtained by each food in step two appear in Figure 6.10. Here the appealing form of each food, regardless of the popularity of the item, was chosen more often by the respondents than its unappealing form. Also, the unpopular foods get a bigger proportion of the total score in step 2 than they had obtained in step 1 (47.5% vs. 42.6%).

Figure 6.11 illustrates the scores obtained by each food in step 3. As in step 1, the appealing form of each food scores higher than the unappealing one except in the case of the orange juice and the pineapple. An important difference with the previous two stages is that, for the first time, the unpopular foods obtain a slightly higher proportion of the total score than the popular foods (50.5% vs. 47.8%).

Finally, Figure 6.12 gives the total score obtained by each food. It reflects an overall preference for the foods presented in an appealing form. This preference is particularly noticeable in the case of the popular foods. The unpopular foods are seen to gain almost half of the total maximum score possible (46.8% vs. 52.1%).

Figure 6.10 Scores obtained by each food in its appealing and unappealing form in step two of the game (Also expressed in percentage of the maximum score of 1152).

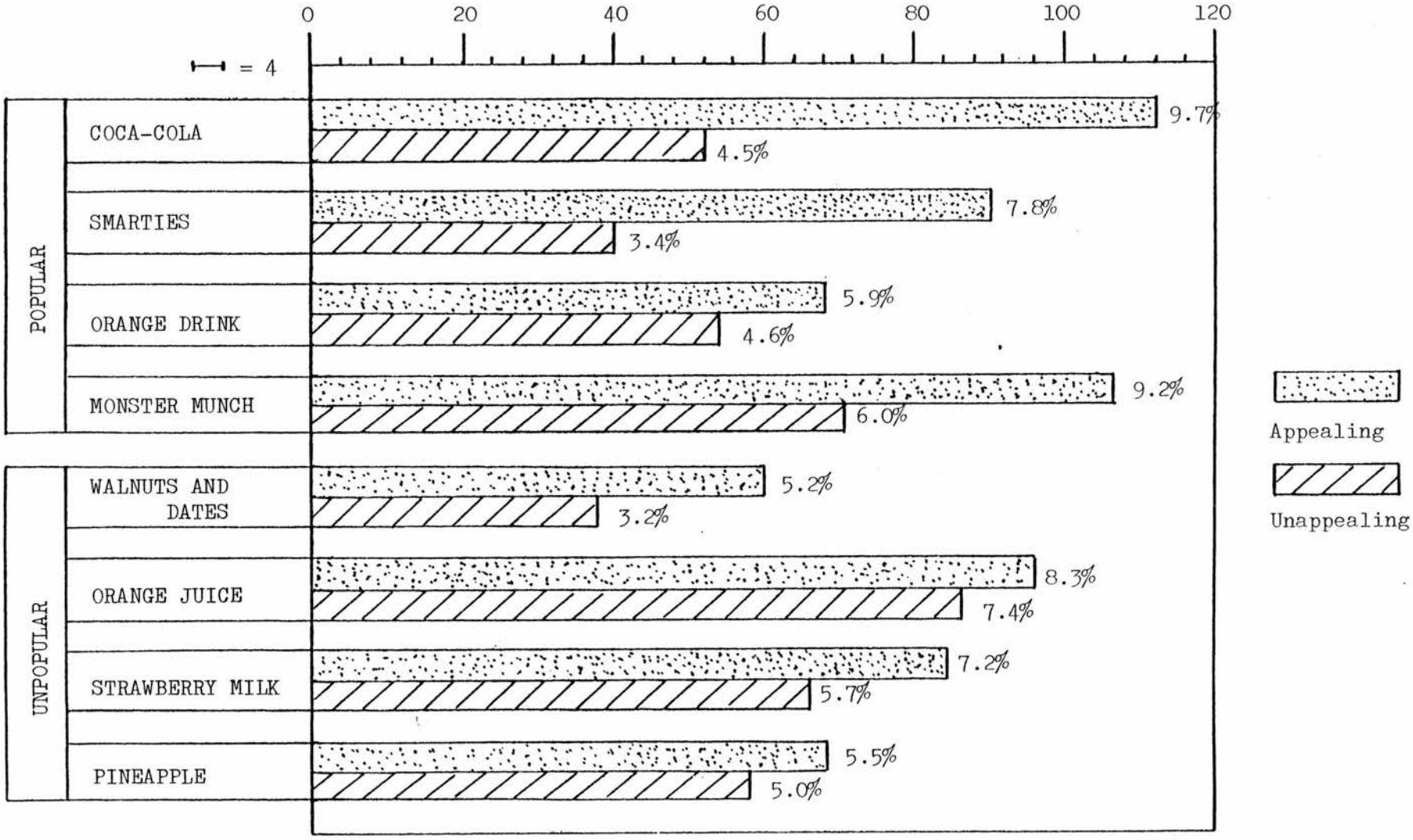


Figure 6.11 Scores obtained by each food in its appealing and unappealing form in step three of the game. (Also expressed in percentage of the maximum score of 576)

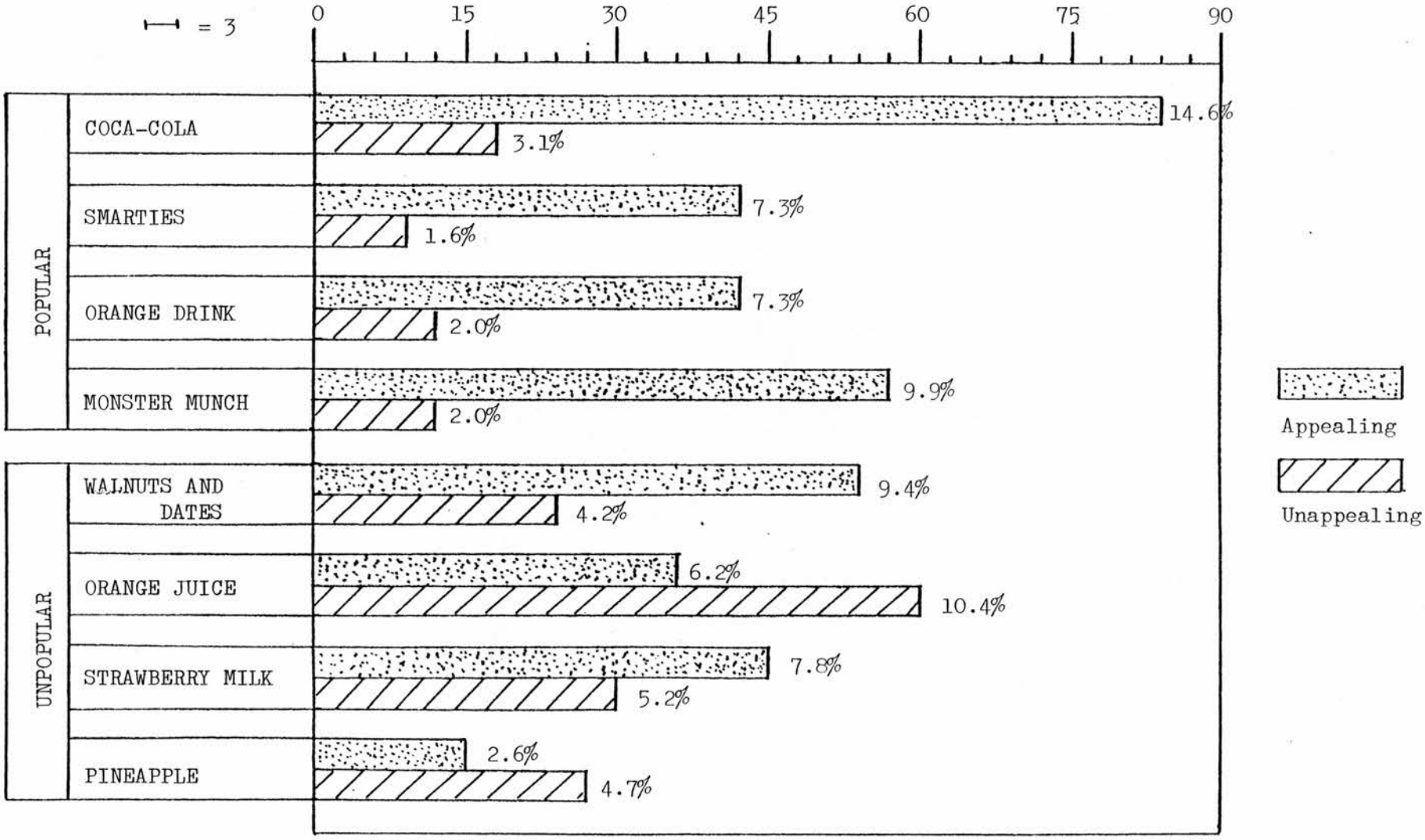
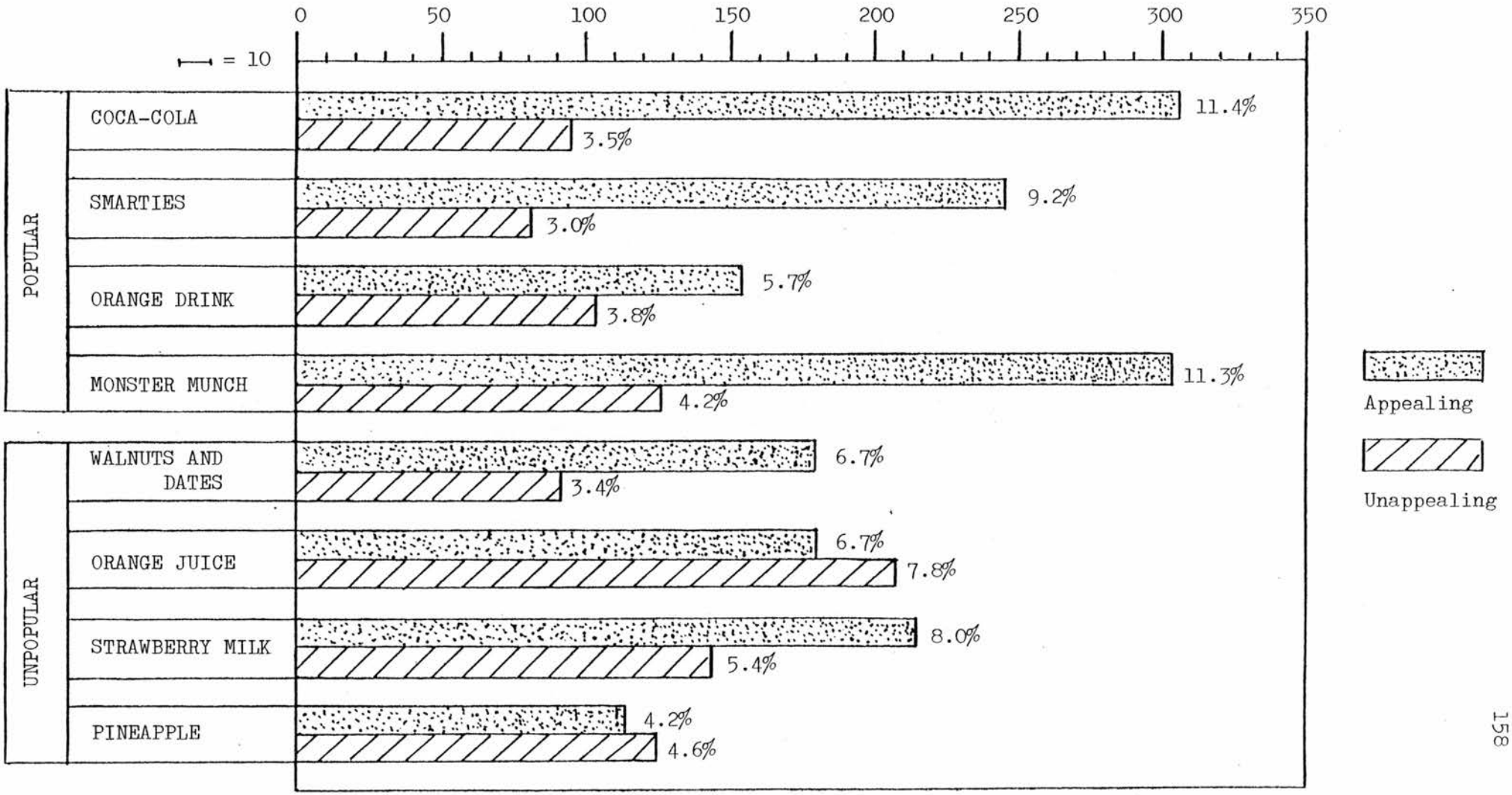


Figure 6.12 Scores obtained by each food in its appealing and unappealing form in all three steps of the game. (Also expressed in percentage of the maximum possible score of 2,688)



6.4.6.2 Discussion of the findings in relation to hypothesis no. 5.

The hypothesis is partly supported by the findings in the sense that the visual aspect of the foods is seen to make a difference in their being selected or not by children. However, this effect does not work regardless of the nature of the food as much as the hypothesis implies. In fact, there are many other aspects to the findings that should not be overlooked.

The first striking aspect, and this is true of all three steps, is the dispersion of the scores among the sixteen foods. Even the two champions (can of Coca-Cola and packet of Monster Munch crisps) do not reach 15% of the maximum possible score. It is also surprising to discover that even the very unattractive items have been chosen at all. This indicates the importance of variety since most of the respondents preferred to choose an unpopular-unappealing food rather than selecting twice a popular appealing one.

A second interesting and encouraging fact is that the unpopular foods obtain a proportion of the maximum possible score that is steadily increasing from step 1 to step 3. This could be attributed to the child's desire for variety but it can also be the result of an increasing familiarity with the unpopular foods which were not as familiar to most children as the popular ones. Birch (1980) in her study of determinants of preschool children's food preferences found that "the first dimension of food preference was (---) familiarity" (p.31). The author did not specify what set of variables this concept referred to except to say that it included the children's ability to name the foods correctly.

With regard to the concept of availability which was the focus of hypothesis no. 1, it is of major importance to notice that

the pure orange juice scores higher in all three steps than its "competitor", the orange drink. This indicates that, were the pure fruit juices given the same distribution as the fruit-flavoured drinks, they could beat the drinks on the market. It must be pointed out here that at the time of data collection, the price of a carton of Just Juice orange juice was the same as the price of the orange drink in the monster-shaped container. The disappointing performance of the orange drink in contrast with the Coca-Cola can be explained by the fizzy texture of the latter. Even if children were presented with pictures rather than the real products, they could easily associate the image of Coca-Cola with its fizzy texture which was found to be related to children's eating.

Finally, the fact that, except in step 2, the Just Juice carton of orange juice scores better than the squizzy bottle of the same juice which was thought to be more attractive, can be attributed to a wrong assessment of the attractiveness of the bottle. It is understandable that the respondents found it less attractive than the carton considering that there was no label, pattern, or even name on it. Much more intriguing is the poor performance of the pineapple lollipop in comparison with the bowl of pineapple chunks. The lollipop-shaped pineapple looks definitely more appealing than the dish. Why was it not chosen more often then, with the exception of the choices made in step 2?

6.5 Limits of the Findings and Conclusions

Before drawing any conclusions from the findings presented in this chapter, it is important to be aware of their limits.

The present study being descriptive and exploratory, its find-

ings cannot be used to predict children's behaviour in a particular context. It is limited to a group of primary school children living in one city of Scotland. Because the sample was partly purposive, this group cannot be considered as representative of all primary school children attending schools in Edinburgh. In fact, a deliberate attempt was made to get the extremes of this population i.e. a group of relatively privileged children and a group of underprivileged ones.

Another limit of the findings is that they are mainly based upon one 24-hour recall by children. As mentioned at the beginning of the chapter, recall is relatively poor among the younger groups of primary school children and the sample included a proportion of children aged less than 6 years larger than in the general population. Finally, apart from the game of pretend, the subjectivity of the measurement cannot be overlooked. In that respect, however, it is interesting to discover that the findings agree with those of the few studies that have focused on similar dimensions.

The findings provide information to identify target groups for further intervention. They indicate that children attending schools located near "sweet shops" and "chip shops" are more at risk of consuming non-recommended foods than those attending schools isolated from shops; however, this difference is statistically hardly significant. The respondents attending the two schools located in a depressed area were found to have a consumption of fruits, vegetables and milk significantly lower than the consumption of the same foods by the private school children if the school dinner is excluded. This indicates that underprivileged children should get priority in future interventions as they do presently in the school

dinner programme. Regarding the age, there are indications that preventive interventions should aim at children younger than seven years of age.

The rest of the findings are more concerned with the nature of interventions than with the groups of children who are more likely to benefit from them. Overall, the findings support the thesis put forward in this research which can be summarized as follows. If we accept the definition of children's eating as opposed to adults' eating used here, the two types of food consumption contrast with regard to the patterns of eating and the physical characteristics of the foods consumed. Children's eating appears to be characterized by a lack of structure, i.e. eating at any time (preferably between meals), any where, and not using dishes or utensils. Children's foods have "strong" tastes, hard, effervescent or crispy textures, and are consumed at room temperature. They are also attractive and come into sizes not bigger than a mouthful or in a packet.

However, the findings present some contradictions which have been pointed out earlier. Why are all wrapped and "natural" foods seen to be associated with children's eating in Appendix XVII-F, regardless of their visual qualities? Why did the attractive pineapple lolly score lower than the dish? Above all, was it appropriate to define children's eating as all food consumption done in the absence of adults? The ethnographic interviews allowed a few children to answer these questions themselves.

CHAPTER 7 *

HAVING A PLAYPIECE: AN ETHNOGRAPHY OF CHILDREN'S EATING

It is 10.30 and in Burns School a bell rings loudly to set the pupils free for their morning break. By the dozen they emerge into the playground and almost every single one of them has something to eat. Today is Friday and a group of mothers from the neighbourhood came, as they do each week, to sell crisps and sweets just before the break. The profits made help to finance extra-curricular activities, much needed in their depressed area. So, children are encouraged to patronize them.

Jenny bought a packet of Wotsits; she spreads her coat on the grass, pours the contents of the packet on it, and welcomes her pals to the crisps. They all sit around the heap of Wotsits and share it. James has Rolos. He debated between the Rolos and a chew plus a few bubble gums which he could have bought for the same price. The bubble gums last much longer than the Rolos but he loves chocolate. Also he can trade one of his Rolos for a bubble gum later with Mark. Jim got a big Kit Kat and ate two of its four fingers earlier. Now he is chasing Jan pretending he is a bull and holds each of the other two fingers on the top of his head to make horns. Allan had taken a small bottle of an orange fizzy drink from home to have with his packet of salt and vinegar crisps. He would like to play football with his friends now and the bottle is a nuisance. He was not thirsty enough to finish it as he had drunk his carton of school milk before the break. So, he closes the bottle with its twisting cap and puts it inside his coat to prevent any breakage;

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* In this chapter, the names are fictitious.

this way he can drink what is left after lunch. Mark bought a big strawberry chew but could not finish it before the bell rang to return to his classroom. He carefully wraps in its wrapper the rest of his chew which he wants to save for after morning school.

Mary was driven to school by daddy this morning as usual. He often keeps mint Polos in his car. Mary loves them but her mother gave her a satsuma for her morning break. She is usually allowed to choose between home-made biscuits and fruit but her mother did not have time to bake this week-end. Also, this week is "Snappy Smile Week"! There are posters all over the school to remind you to brush your teeth after eating and the teacher will approve of Mary's satsuma. She gave a lesson on the different sorts of foods yesterday and explained why sweets are bad for your teeth. At playtime, in the playground of her private school, Mary can see that most other children also make a special effort during "Snappy Smile Week" to avoid eating sweets. Almost everyone has a packet of crisps instead and a few have an orange or an apple. Mary does not mind having an orange at home where mummy can cut it in small pieces and wipe her hands after she has finished eating, but at school it is too messy. John does not look very hungry. He is playing football using his apple as a ball! Julia has got a packet of those new Farmer Brown crisps. Mary can see from the colour of the wrapper that they are salt and vinegar flavoured, her favourite kind. They are also shaped like animals and you can make all sorts of noises as you eat them pretending you are a cow, a horse, or a sheep.

7.1 Discovering the Playpiece

The data presented in Chapter 6 indicated that foods consumed by children when they are alone or in their peers' company share some

physical characteristics that differ from the characteristics of the foods eaten with adults. It was also found that, similarly, the patterns of eating contrast. This was believed to reflect an underlying set of values shared by children as opposed to adults' values. Questions were raised, however, regarding the adequacy of the definition of children's eating, i.e. all food consumption done in the absence of adults. The observations described in Chapter 1 and at the beginning of the present chapter suggest that there is more to children's eating than what can be concluded from Chapter 6. Therefore, it had been decided to complement the 24-hour-recall interviews with ethnographic interviews to allow a few pupils to give their own definition of children's eating assumed to be a part of a culture of childhood.

Spradley (1979) defined culture as "the acquired knowledge that people use to interpret experience and generate social behavior" (p.5). Adopting the symbolic interactionism approach, he suggested to shift the emphasis from behaviour, customs, objects, or emotions to the <u>meaning</u> of these phenomena. Thus culture is seen as a system of meaningful symbols known to those who share it. Spradley developed a methodology designed for the investigation of meaning and the present chapter describes how this methodology was applied to the study of children's eating and what results were obtained.

The overall objective of this part of the study was to discover, through ethnographic interviews, what concepts children use to classify their eating experience and how they define these concepts.

To this end, one informant was selected from each participating school in collaboration with the school authorities. The following criteria guided the selection: a) a boy or a girl from Grade 2 who had been sampled for a 24-hour-recall interview, and b) a child who would

not mind spending his/her after-lunch break talking with a stranger about foods and eating, once a week for around four weeks. Assuming that younger children would be better enculturated, and therefore be more competent informants than their older peers, it was decided to choose informants as young as possible. Pupils from Grade 1 were excluded for ethical reasons given that they had to adjust to their first year in primary school. In this manner, four girls were initially selected but two of them were replaced after the first interview because they were refusing to continue. Table 7.1 shows that seven informants (3 boys, 4 girls) participated in a total of 22 interviews, 12 of which were taped.

Table 7.1 Distribution of the informants and interviews done in the four participating schools

School	No. of Informants		No. of Interviews	
	Boys	Girls	Taped	Untaped
Priv. L.D./L.P.	0	1	5	1
Priv. H.D./H.P.	0	1	0	5
Dep. L.D./H.P.	2	1	6	2
Dep. H.D./L.P.	1	1	1	2
Total	3	4	12	10
	7		22	

It is worth mentioning here that the two female pupils chosen in the private schools remained informants until the end. One of them was a poor informant; none of the interviews done with her was

taped. The boy chosen in the "Dep. H.D./L.P." school in replacement of the girl who had refused to come back after the first interview, was also abandoned; he was unco-operative and did not turn up after his second interview. No other informant was chosen from that school. Consequently, most of the data collected through ethnographic interviews come from two girls attending two different private schools and two boys attending one of the two schools in the depressed area. These two boys were interviewed together most of the time. Five of the seven informants were aged between six and seven; the other two were respectively five years and ten months old (girl), and five years and eight months old (boy).

The ethnographic interviews were done concomitantly with the rest of the data collection and by the investigator only. The informant was met once a week after lunch in a room provided by the school authorities. The average length of these interviews was fifteen to twenty minutes but a few lasted as long as half an hour.

An effort was made to adapt to children the techniques described by Spradley. As only one informant (girl from private school aged 6 years 6 months) could read, written words, statements or questions had to be excluded. Also, the interviews had to take into account the short attention span of the informants. Three strategies were used to cope with these problems: a) photographs and illustrations were used extensively, b) the tasks were devised and presented as games whenever possible, and c) a new task was introduced when the informant was expressing boredom. Finally, allowing the children to operate and play with the tape-recorder contributed to maintaining their interest.

During the first four interviews, four informants were presented with about eighty illustrations of a wide variety of foods taken from

the complete set of the 178 pictures listed in Appendix XVIII. They were asked to sort them into foods they had had before and foods they had never eaten. Two children were also asked to separate the foods they bought themselves sometimes in shops from those they got at home. The number of items thus said to have been bought by them was remarkably small. Mary picked the following: the name she gave to these foods appears in parenthesis.

A pink, chocolate-textured, bear-shaped sweet (a pink teddy)

Chips from a chip shop wrapped in brown paper (chips)

A tip top Cola drink (Tip Top Jabblies)

Wholefood Mini-Meal made of oats, apricot and almonds (A bar of Chocolate). Mary mistook the wholefood snack for a chocolate bar.

Carl selected only four items too and his comments are reported for each food.

A pack of Monster Munch crisps)
) "I buy those to share
A pack of Tooty Frooties sweets) with my pals".

A Magic Monster lolly - "An ice lolly"

A pint of milk in a plastic bottle. - "I buy milk for myself sometimes".

From the data presented in Chapter 6, it was possible to explain these choices but there were dozens of items that had not been selected and that were suspected of being children's foods, e.g. Mint Pacers, Rolo, Mint Polo, Wall's Funny Feet, Mars Bar. Evidently, the informants would not choose them if they had never bought them; the task was unlikely to disclose all the items that could be children's foods. What was needed was a term that could include these eight foods selected by the two informants. Were these eight items a kind of something?

Spradley called this type of question "included term questions" and stated that they are "often awkward to ask" particularly when the interviewer has only a few terms to which she can refer (Spradley, 1979, p.129). This difficulty is increased with young children who are just beginning to understand abstract concepts.

As the investigator was searching for a possible cover term, her attention was caught by an expression frequently used by respondents in the course of the 24-hour-recall interview. Many of them had spontaneously stated "For my playpiece, I had ..." to refer to the food they had either bought or taken from home to eat during the morning break. It was hypothesized that the word "playpiece" was the concept looked for, i.e. the cover term that could include all the "children's foods". This was immediately investigated at the following ethnographic interview (the fifth one) and it produced such a dramatic effect that it was obvious that the concept was very meaningful to the informant. Thereafter, the objective became to discover the meaning of the concept "playpiece" as defined by children and in what ways playpieces differ from other foods.

Children were never asked directly "What is a playpiece?" but two informants provided statements that can be regarded as definitions.

> There are two kinds of playpieces, you see. One is a toy that you bring in the playground to play with; the other is something to eat at playtime (Lynn, 6 years 6 months).

> Well, it's only things like sweets and things you can eat like crisps and lollipops and chews and Milky Ways and things like that (Frank, 5 years 8 months).

Int.* Yes; only sweets, crisps ...

Frank: Yeah, things like that and there's lots more.

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* "Int." stands for interviewer.

These definitions, although useful, were far from satisfactory. However, as Spradley stated, "Ethnographers have developed two other approaches for analysing the meaning of terms and these lead to taxonomic definitions and componential definitions" (Spradley, 1970, p.72). In order to arrive at these two kinds of definitions, the informants were asked to perform a variety of tasks such as sorting out from a set of pictures of foods those that could be playpieces and those that could not, then grouping playpieces of a same kind, and naming each kind. A taxonomic analysis of all the terms discovered was then executed to find out how they were related to each other. The taxonomy of foods thus obtained appears in Table 7.2. Foods are divided into two large categories or domains: meals and playpieces. Just by the sheer number of sub-domains within the playpiece category, it is obvious that this domain is much more meaningful to children than the domain "meals". The playpiece domain is very large and complex and it must be pointed out that it is neither complete nor static as new foods are constantly being introduced to the market and assessed by children.

One of the most interesting facts about this classification is that for fourteen of the seventeen categories of playpieces, their inclusion into the playpiece domain was either a source of disagreement between children or it depended on certain conditions that food items within the sub-domain had to fulfil. To discover what these conditions were, a componential analysis of the food domain was done. This type of analysis aims at identifying the significant contrasts between the various terms used by informants.

Two basic strategies were used to discover the contrasts between the different sub-divisions of foods up to the point where the child could not see any more division, i.e. up to the last included terms.

Table 7.2 Taxonomic Definition of Foods

MEALS	BREAKFAST	Examples of breakfast foods: Cereals with milk and sugar, Grilled pork sausages, Milk, Toast with marmalade	
	LUNCH (School dinner)	Examples of lunch foods: Soup, Egg flan, Chips in a plate, beans, rice pudding, salad.	
	DINNER (also called supper or tea)	Examples of dinner foods: Chicken, mashed potatoes, cooked carrots, spaghetti, cake, tea or coffee or milk.	
	NIGHT-TIME TEA (also called supper by some children)	Examples of night-time tea foods: Toast with jam, tea or coffee, or milk, biscuits.	
PLAYPIECES	CHIPS*	from chip shop	
	CAKES* AND BUNS*	CAKES	Cup cakes A small piece of a big cake
		BUNS	Buns with nothing on them Scones Strawberry buns Shortcake buns Coconut buns Buns with cream on top Big round buns with sugar on them
	DRINKS*	DRINKS IN A FLASK	Tea Coffee Hot chocolate
		MILK DRINKS	A drink of milk School milk Strawberry milk drink Banana milk drink Chocolate milk drink
		SLUSH PUPPIES	
		JUICE	Orange juice Grapefruit juice Apple juice Ribena Orange squash Coca-Cola Vimto juice IRN-BRU

Table 7.2 (Cont'd) Taxonomic Definition of Foods

PLAYPIECES	CRISPS	by flavour	Plain Salty Cheese and onion Pickled onion Cheesy Salt and vinegar Ready salted
		by name	Wotsits Monster Munch Gammon Outer Spacers Griddles
	BISCUITS*	SUGARY BISCUITS	Digestive Home-made biscuits Plain biscuits Chocolate biscuits
		CHEESE BISCUITS*	
	LØLLIES*	LOLLIES	Niblet Drumstick
		ICE LOLLIES*	Vampire (Magic Monster)
		ICE CREAM LOLLIES*	Funny Feet Cornetto
	ICE CREAM*	ICE CREAM LOLLIES	Funny Feet Cornetto
		CONES	
		CORNETS	Cornetto King Cone
	FRUITS*	Apples Oranges Grapes* Bananas	

Table 7.2 (Cont'd) Taxonomic Definition of Foods

PLAYPIECES	VEGETABLES*	Cucumber* Pickled onions* Raw carrot*			
	NUTS*	Monkey nuts Nuts			
	GUMS	Bubblelies (Bubble gums)	Strawberry B.G. Red B.G. Black B.G.		
		Chewing gum			
		Jaw breakers			
	SWEETS	Snowballs			
		Space Dust (also called Funny stuff, Sherbet)			
		Chewing gums			
		CHEWS	SOFT	Mint chews	Mint Pacers
				Strawberry chews	
			HARD	Jelly Tots Tooty Frooties	
				Chewits	Strawberry Chewits
		CHOCO-LATES	BARS	Mars Bar, Star Bar Bounty Bar, Cobana Milky Way, Caramilk	
			WEE BARS	Trio, Club fruit Kit-Kat Drifter	

Table 7.2 (Cont'd) Taxonomic Definition of Foods

PLAYPIECES	SWEETS (Cont'd)	CHOCO-LATES (Cont'd)	BISCUITS	Wee bars Other biscuits unnamed		
			BALLS	Wee footballs Other balls unnamed		
			Gnome Smarties Maltesers Rolos			
		SWEETIES	Marshmallow sweetie Pair of glasses Jelly worm Dummy (or Baby suck) Chocolate monkey Chocolate teddy bear	Further divided by colour		
			Chocolate ball A pig Cola bottle Cola cubes Jaw breakers Gob stoppers Licorice pipes Any cylinder-shaped small packet (not longer than 2 inches) of little round sweets (unnamed)			
		BARS	CHOCOLATE BARS	Milky Way, Bounty Bar Star Bar, etc		
				Wee Bars	Kit-Kat, Trio Club fruit, Drifter etc.	
			MACAROON BARS			
			MILKY BARS			
			FUDGE			
		POLOS	Mint Polos Fruit Polos			

Table 7.2 (Cont'd) Taxonomic Definition of Foods

PLAYPIECES	SWEETS (Cont'd)	LOLLIES	LOLLIES	Niblet Drumstick
			ICE LOLLIES*	Winner Vampire
			ICE CREAM LOLLIES*	Funny Feet Cornetto
		SHERBET (Fizzy, Funny Stuff)		Space Dust
		SWEETY CIGARETTES	The Incredible Hulk Superman Batman and Robin Spider Man	
	CHEESE*			
	RAISINS* or other sundries that most children cannot name			
	WHOLEFOOD SNACKS* that no children could name but described as either "things made with sunflower seeds" or "Gingerbread man kind of playpiece".			

* Indicates categories for which there was disagreement among informants as to whether they could be playpieces or not. Chips were selected by only one girl, and cheese in small triangular packet by one boy.

The first strategy often took the following form. The informant was presented with a set of three pictures of foods which included unanimously-agreed-upon playpieces as well as a controversial one. She/he was then asked: "What difference do you make between this one and the other two?" Another version was: "Some children told me that this cannot be a playpiece. What would you tell them to convince them that it can be a playpiece?" In this way, it was possible to find the major distinctions children make between playpieces and other foods. The emphasis was put on those categories of playpieces that were a source of disagreement rather than on the meal-playpiece opposition. The second strategy was exploited to disclose contrasts between items within a given sub-domain of playpieces. It consisted of using two or three pictures of foods which had clearly been identified before as belonging to one sub-domain but which were different with respect to their shape, texture, flavour, colour or any other suspected contrast. The informant was then asked: "What difference do you make between this one and the other one(s)?"

The list of all the contrasts discovered grouped into dimensions is given in Table 7.3. These dimensions can be divided into very meaningful ones (which Spradley calls "highest level of contrast") and secondary ones. The basis for distinction between these two levels is that the highest levels of contrast are conditions that all foods must fulfil to qualify as a playpiece and on which children are very reluctant to compromise. The other dimensions of contrast are used by children to distinguish playpieces within a given sub-domain. These are not as crucial in regard to whether or not a child will choose a food and are much more a matter of individual preference. Table 7.4 summarizes the componential definition of foods at the highest level of

Table 7.3 Dimensions of Contrast for the Food Domain

1.0 UTENSILS

1.1 Not required

1.2 At least one required

2.0 DISH/CONTAINER

2.1 Not required

2.2 Must be in a carton, a bottle or a flask with cap

2.3 Glass, cup or dish required

3.0 TASTE

3.1 Tasty enough without any addition

3.2 Requires a complementary food to be tasty

4.0 SIZE

4.1 Packet or smaller

4.2 Too big to be eaten at once

4.3 A lot of food

5.0 PACKET

5.1 Does not need to be wrapped or comes in a small packet or container

5.2 Must be put into a small bag (or wrapper) or in a small container with a cap

5.3 Cannot be presented in a packet

6.0 TEMPERATURE REQUIREMENT

6.1 No requirement

6.2 Must be kept warm

6.3 Must be kept frozen

Table 7.3 (Cont'd)

7.0 HYGIENE REQUIREMENT

7.1 No requirement

7.2 Precautions needed to avoid making a mess while eating it

7.3 Adult needed to wipe your hands after eating it

8.0 FLAVOUR (incomplete)

8.1 Sweet

8.2 Mint

8.3 Chocolate

8.4 Fruity (further divided into strawberry, orange, blackcurrant etc. ...)

8.5 Cheesy

8.6 Barbecue

8.7 Salt and Vinegar

9.0 COMPOSITION (incomplete)

9.1 With sherbet centre

9.2 Without sherbet centre

9.3 With chewing gum centre

9.4 Without chewing gum centre

9.5 Ice cream

10.0 TEXTURE (incomplete)

10.1 Juice or drink

10.2 Fizzy

10.3 Soft

10.4 Chewy

10.5 Crunchy or crispy

10.6 Hard

Table 7.3 (Cont'd)

11.0 SHAPE (incomplete)

11.1 Round, square, cube (or any other geometrical shape)

11.2 Pair of glasses, football, dummy, heart (or any other familiar object)

11.3 Worm, monkey, pig, mouse, teddy (or any other animal or monster)

11.4 Human or part of human body

11.5 Has a hole in centre

12.0 HAS A STICK

12.1 Yes

12.2 No

13.0 WRAPPED UP

13.1 Yes

13.2 No

14.0 NAME (incomplete)

14.1 Descriptive of item (chocolate teddy, jelly worm, pair of glasses, orange, apple)

14.2 Brand name (Maltesers, Smarties, Coca-Cola, Monster Munch, Tooty frooties)

14.3 Invented names (names created by children, e.g. "The Vampire" or "Funny stuff")

15.0 COLOUR (incomplete)

15.1 Red

15.2 Yellow

15.3 Orange

15.4 Pink

15.5 Different colours

Table 7.4 Componential Definition of Foods (Highest level of contrast)

Foods	Dimensions of Contrast 1.0	2.0	3.0	4.0	5.0	6.0	7.0
Meal foods	1.2	2.3	V	4.3	5.3	6.2 or 6.3	7.2
Chips from chip shop	1.1	2.1	3.1	?	5.2	6.2	V
Buns	1.1	2.1	3.1	4.1	5.2	6.1	V
Cakes	V	V	3.1	4.2	5.3	6.1	V
Drinks	1.1	2.2	3.1	V	5.2	V	7.2
Crisps	1.1	2.1	3.1	4.1	5.1	6.1	7.1
Biscuits	1.1	2.1	V	4.1	V	6.1	7.1
Lollies	1.1	2.1	3.1	4.1	V	V	V
Ice cream, lollies, cones or cornets	1.1	2.1	3.1	4.1	V	6.3	7.2
Fruit	V	V	3.1	V	5.2	6.1	V
Vegetables	V	V	V	V	V	V	V
Nuts	1.1	2.1	3.1	4.1	V	6.1	7.1
Gums	1.1	2.1	3.1	4.1	5.1	6.1	7.1
Sweets	1.1	2.1	3.1	4.1	5.1	6.1	7.1
Things made with sunflower seeds	1.1	2.1	?	4.1	5.2	6.1	7.1
Cheese	V	V	3.1	V	5.2	6.1	V
Raisins and other sundries	1.1	2.1	?	4.1	5.2	6.1	7.1

"V" means that either children do not agree regarding the dimension or their assessment varies from item to item within the sub-domain

? means that there is not enough information to decide

contrast. It shows that foods unanimously classified as playpieces share similar attributes and so do the meal-type of foods. The controversial sub-domains on the contrary possess some characteristics of playpieces and some characteristics of meals. The consequence of this bi-dimensionality is that each food belonging to one of these borderline sub-domains will either be classified as a playpiece or not depending on whether it possesses the necessary attributes or not. Following is a brief description of these attributes.

7.1.1 The utensils dimension

Playpieces are foods that do not require utensils:

Int.: What are the differences between a meal and a playpiece?

Frank: Well, it's 'cause ... well, it's 'cause, hum, it's cause you always have, it's 'cause with a dinner or a supper or things you get knives and forks, but with a playpiece you don't use knives and forks.

This was also expressed indirectly by Lynn. Asked what kinds of fruits cannot be a playpiece, she replied:

> Grapefruit (...) because you need someone to cut it in half for you (...) or you need a grown up to help you with a bit (...) and wipe your hands after.

This dimension was further explored with her in the following instance:

Int.: For a meal you use utensils and dishes, and for a playpiece you don't use utensils and dishes, do you?

Lynn: Yes, that's true.

Int.: Do you see other differences between a meal and a playpiece?

Lynn: Well, a meal is made of lots of pieces and a playpiece is ... in one piece! That's the simplest way of explaining it.

7.1.2 The dish/container dimension

This dimension is slightly more complex than the first one as reflected by the informants' subtlety in assessing it. It is inconceivable to use a dish while eating a playpiece:

Frank: Not a plate for a playpiece! [1]

Examining the two presentations of fresh pineapple from the game of pretend, Lynn concluded:

Lynn: What's in that bowl? ... Pineapple. I see. No, I'm afraid not ... Hum, some pineapple ... in fact, a bowl[2] of pineapple couldn't (be a playpiece) but a pineapple on a stick[3] could.

For drinks, the classification depends almost entirely on the kind of container. All informants rejected drinks that were presented in cups or glasses. The association of glasses with meals is evident in the following example. Presented with a picture of a carton of Just Juice orange juice and pictures of various other drinks in small cans and bottles, Lynn explained:

Lynn: You would eat this (the Just Juice) with a meal. You wouldn't eat those (the other drinks). (Then using a photograph showing a family having a meal with glasses of orange juice on the table, she pointed at the glasses and said:) You see?

The whole subtlety of this dimension is well illustrated in the following excerpt:

Int: From the many sorts of things that you told me could be a playpiece, I noticed that you did not choose anything to drink. Can drinks not be a kind of playpiece?

---

[1] He was answering No. 11 of the questionnaire in Appendix XXI.

[2] Words are underlined when the informant stressed the point.

[3] She was the only one to include the pineapple stick among playpieces.

Lynn: Well, (pause) Hum (pause) If ... If you bring juice to school instead of having a school drink at lunch, then if you got any left over from lunch you can use that as a playpiece (...) But, if you got a school lunch, you've got to drink all the juice (...) If you bring a packed lunch, then you can drink some in the playground.

Clearly, drinks qualify as playpieces only if they are in containers that close tightly, such as bottles or flasks with a cap, or cans.

7.1.3 The taste dimension

Even if they do not require utensils or dishes, foods are not acceptable playpieces if they are not tasty enough on their own. This may appear to rely heavily on individual preferences but in fact there was a remarkable degree of agreement among informants regarding the kinds of foods that are tasty enough on their own to qualify as playpieces. Controversy arose regarding that dimension with only one subdomain: the biscuits. While all illustrations of sweet biscuits used were classified as playpieces, cheese biscuits were so classified only when the informant thought they were tasty enough:

Int.: (Using two pictures of cheese biscuits and two of sweet ones) You said that only these two kinds (the sweet ones) of biscuits could be playpieces and I was wondering what was the difference between these two and these two.

Lynn: Well, Hum ... Those are the sugary biscuits and these are biscuits that have to have cheese put on them but if they were carried about in your school bag for your school break, all the cheese would fall off. So really ... and the butter would get on your satchel (...) and they (referring to one of the two kinds of cheese biscuits) are also crackers. Only they (the other kind of cheese biscuits) are cheddar cheese biscuits. I rather like those; they taste of ... they taste of cheese.

Int.: And these don't (the Ritz cheese crackers).

Lynn: No. You have to put cheese on those.

7.1.4 The size dimension

One of the major contrasts between meals and playpieces is that meals are perceived as being made of "a lot of food" as expressed by an informant quoted earlier. So, foods will not qualify as playpieces if they are too big and three sub-domains are particularly vulnerable in this respect: cakes, drinks, and fruits. This comes out in the following excerpts:

Int.: You put these two (6 apple cup cakes and a whole chocolate cake) together. What would you call that kind of playpiece?

Karen: Cake

Int.: Could we really have a cake as a playpiece?

Karen: No. You would have to cut it.

... and with another informant:

Int.: (Showing the picture of the same whole chocolate cake) How about that? (for a playpiece).

Carl: Aye ... 'cause that's wha' I got for my birthday.

Int.: And that can be a playpiece?

Carl: No! (firmly)

Int.: No? Not that.

Carl: Just a wee bit.

Both the use of a utensil and the size of the food are stressed here. It must be realized that if children accept to include cakes in the playpiece domain, provided that they are presented into small portions, they are not so ready to compromise for big fruits:

Int.: Can all kinds of fruit be a playpiece?

Lynn: Yes. But ... hum ... I don't think all kinds of fruits ...

Int.: Not all kinds of fruits ...

Lynn: Not exactly all kinds ... but most.

Int.: Can you think of some kinds of fruit that could not be a playpiece?

Lynn: Well, I'll try. (Long pause) A big piece of melon ... would be too big. And, anyway, if you ate melon you'd get too sticky.

However, it is not enough for cakes, drinks, and fruit to be of a manageable size; many also have to be in a packet.

7.1.5 The packet dimension

The packet concept is so important to children that they extend it to all packaged foods or drinks wrapped or contained in a small bag, wrapper or container. Presented with an illustration of four apple turnovers, and asked if they could be playpieces, Carl replied:

Carl: No.

Int.: No?

Carl: Just a wee bit.

Int.: One of those could be a playpiece.

Carl: In a packet.

Asked to identify playpieces from the pictures used for the game of pretend, Lynn was very hesitant about the drinks. Her comments encapsulate what goes on in children's minds when they consider certain kinds of food:

Lynn: I'm afraid that this juice can't unless you can use drink, unless some people use drinks of it, though we'd better just leave out the drinks ... In fact, I think we should put in one drink, one drink, just to show ...

Int.: Just to show that drinks can be a playpiece.

Lynn: Yes, but they can't be it very often.

Int.: No, not very often.

Lynn: No, not very often.

Int.: Hm. Hm. But sometimes drinks can be a playpiece. So, could we say that all the things that are drinks there could be a playpiece, sometimes?

Lynn: No, not all.

Int.: Not all. Can you...

Lynn: Well.

Int.: Can you take those that could be a playpiece sometimes?

Lynn: Well, they could all be a playpiece but I suppose ... that can't be a playpiece because it's in a bottle and you need a mother to dish it out for you, not dish it out, cup it out (laughing).

Int.: Oh, I see. You would not drink directly from the bottle.

Lynn: No, 'cause that would have quite a lot in it, and it would quite fill your stomach up.

Int.: Even if it is a small bottle, about that size (showing with my hands the actual size of the bottle).

Lynn: Well, that size would do. That's a packet which isn't very big. So ... a miniature packet of that would be.

The item under scrutiny here was the squizzy bottle of pure orange juice meant to be the attractive counterpart of the carton of Just Juice orange juice. In this instance, it is clear that the informant had a wrong perception of the size of the bottle and she used the concept packet to express the idea of the small size. The dimensions size and packet are closely related in the sense that children would not call a packet a large-size item such as a family-size bag of crisps or a pack of about twenty biscuits. However, these two dimensions are distinct and the packet refers more to the wrapping, bag or container than to the volume of an item. Foods such as grapes or monkey nuts which are of a perfectly acceptable size do not qualify as a playpiece unless they come in a packet. Presented with a picture of grapes on a stem, Lynn specified "A bag of grapes would do".

Even some highly valued sweets gain in being packeted. Looking at several pictures of children eating in a school playground, Tim pointed at a girl who had some chocolate sweets and said: "She's got Rolos! ... Yes, she's got them from a packet!"

There are at least three reasons why children should prefer food that come in small pieces contained in a packet; two of them will be discussed later. What appears to be a major reason is a concern for hygiene.

7.1.6 The hygiene requirement dimension

Hygienic preoccupations were not always voiced explicitly, but they were often implicit in children's comments or in their selection of food that could be playpieces. Messy foods do not make good playpieces. This comes in clear contradiction with the belief that children disregard totally eating manners, a belief that has been held up to now in the present thesis. Although there are instances where children do not worry about hygiene, as will be seen later this componential analysis leads to the conclusion that hygiene is a major value at that age group. In fact, according to Wilkinson (1983) it is valued in children as young as three and four years of age. Interviewing nursery school children to find out how they develop views on the causality of illness, he discovered that they blame germs for practically all illnesses. As a consequence of this understanding of illness, children see hygiene as a very important means of prevention and are reluctant to get dirty.

Being hygienic is often linked with being packeted as shown in the excerpt below:

Int.: When you chose those cup cakes (as playpieces), you said that they don't go with anything else.

Lynn: And they don't but they're hardly ever used for a playpiece. Only sometimes ... and it has to be carried in a separate bag 'cause, or they might break ... So, I had those once or twice at lunch.

Int.: These wouldn't be your favourites.

Lynn: No, it's too messy.

Int.: You don't like messy things for a playpiece.

Lynn: No.

Implicitly, the informant also meant that messy foods are meal-type foods (in this case lunch) which require utensils and dishes to avoid making a mess and getting your fingers sticky.

7.1.7 The temperature requirement dimension

This last high-level dimension of contrast is closely related to the dimensions taste and hygiene. Presented with a set of pictures of shops where food can be bought, informants were asked where they could buy playpieces; examining the picture of a chip shop, one girl said:

Lynn: 'Fish and chips'. No. You wouldn't have fish and chips for a playpiece.

Int.: No?

Lynn: No (laughing) it wouldn't taste too good!

Int.: It wouldn't taste too good?

Lynn: Well, if you had them in open air, it would go all cold before you could eat them probably.

Int.: And how about at Summertime when it's warm outside.

Lynn: Well (silence) Well, well, well ... even though you'd use someone to wipe the grease off your hands after eating the chips. And anyway it's not quite as suit; it's more like a meal than a playpiece.

It must be pointed out here that only one informant (girl) classified chips (from a chip shop in wrapper) among playpieces and she did so with some hesitation. The 24-hour recall interviews and the ethnographic interviews both indicate that salt and vinegar is children's favourite flavour for crisps. The brown sauce used to flavour chips in chip shops is also salt and vinegar-type. This flavour, the wrapper, the manageable size of a portion of chips and the

fact that they don't require utensils or dishes are all characteristics that combine to make chips from chip shops one of the ideal transitions between playpieces (salt and vinegar crisps) and meals (mashed potatoes). Chips are situated in the food domain at the conceptual borderline between children's foods and adults' foods, a possible explanation for their extreme popularity as they fit into both worlds.

Ice lollies were not accepted as playpieces by all informants because they have to be kept frozen and if a child thinks in terms of a playpiece to take to school, they are automatically excluded. As Lynn put it: "Ice cream would probably melt in your satchel making an awful mess."

Once foods have entered the playpiece domain, they are further subdivided by children on the basis of a different set of attributes; the lower level dimensions of contrast. A sweet "stuck onto a stick" is a lollipop; if it has sherbet inside it is probably a niblet. Some chews are softer than others and minty such as the Mint Pacers. A cola bottle is a bottle-shaped chewy sweetie while "cola cubes are square and it's all red ... and it's hard" (Tim). Jaw Breakers and Gob stoppers both change colour as you suck them but the former have chewing gum in the centre, the latter do not. There are all kinds of crisps: salt and vinegar, cheesy, barbecue, cheese and onion, Monster Munch, Quavers and more. Appendix XIX summarizes the componential definition of two sub-domains of playpieces: chews and lollies. In each dimension of contrast the number of attributes is almost limitless and they could not possibly all be identified. In the dimension texture, for example, some informants distinguished between soft, really soft, hard, and really hard chews. Such a variety of attributes calls for different ways of consuming these foods. Before letting children

describe their eating, a short discussion is needed on two aspects of the taxonomy of foods: the sub-domain vegetables and the concept of borderline foods that was alluded to earlier.

None of the seven informants chose any vegetable as a possible playpiece. However, observations of children in different contexts show that some vegetables are acceptable playpieces provided they possess the necessary attributes described earlier. One observed incident will help to understand this. The setting was a country cottage isolated from shops where a group of eight children and four adults from the Society (refer to Chapter 1) had come to spend a weekend. A bag of raw carrots was in the pantry. Seeing the carrots one boy asked for one and obtained it. Within a minute, all the other children also came to have a carrot. This incident happened in the middle of the morning. In Chapter 1, a girl was reported to have spent her last few pence on pickled onions and, in one private school, a boy said he had had a piece of cucumber for his morning playpiece. The raw carrot, the pickled onions and the piece of cucumber have some important characteristics in common that salads, boiled carrots and other cooked vegetables do not share. They could be eaten without utensils and dishes. They were of a manageable size, i.e. small enough to be completely eaten at once. They did not need to be kept warm or frozen and were not messy to eat. Apart from the pickled onions, they were not very tasty, however, and they would need to be packeted if not consumed immediately. So, they are not ideal playpieces but children are ready to compromise on one or two dimensions depending on the context. Evidently the context was conducive to accepting these vegetables as playpieces in these three examples: the girl did not have enough money to buy a sweet or a packet of crisps; the boy in the private school

had been given a piece of cucumber and nothing else; and the Society's group would have much preferred to buy a sweet from a shop had it been possible to do so. In this last instance, however, it is important to point out that sweet biscuits were also available but were not requested by the children.

The phrase "borderline foods" was never explicitly used by the informants but the concept is implicit in the mixed feelings that they expressed about certain foods. Borderline foods include chips, buns and cakes, some drinks, some biscuits, some lollies, ice cream, some fruits, all vegetables, some nuts, cheese, raisins (as well as all other sundries), and wholefood snacks. Almost all these foods can pass into the playpiece domain if they are presented in a small packet.

The following dialogue between two informants from a depressed school illustrates the reluctance of some children to call buns and scones "playpieces". Presented with a set of pictures of shops where all kinds of food can be bought, they were asked to choose those where one can buy playpieces:

Tim: That's a baker. You can get stuff out of that.

Frank: But ... no playpiece.

Tim: I ken, but you can get buns in there.

Frank: Buns are playpieces.

Tim: I had a bun for my playpiece this morning! ... Not for my playpiece ... coming to school.

In another interview, Frank had said: "But a scone is a sort of thing too that can be a sort of ... a playpiece."

To understand this concept better we must now allow children to talk about their eating experience.

7.2 Having a Playpiece at Playtime in the Playground

Up to now, only one semantic principle was used to describe children's eating or rather how they organize their knowledge of food. This principle was the strict inclusion which takes the form: "X is a kind of Y". In this manner, a large variety of foods that are kinds of meals or playpieces were discovered. Children use other semantic principles however, to organize their eating experience. Four of these principles were briefly explored:

rationale, X is a reason for having a playpiece

temporal, X is a time to have a playpiece

spatial, X is a place to have a playpiece

means-end, X is a way of eating a playpiece

7.2.1 Reasons to have a playpiece

Most of the time children have a playpiece because they are hungry. Another common reason is because it has been given to them. During one interview done with two boys, one of them had just said that, most of the time, his morning playpiece is given to him:

Int.: And is it the same case for you Tim?

Frank: (replying for Tim) Yes! ... 'cause he gets things from Johnny ... he gets rolls, pies.

Tim: I get pies from that boy I went to meet ... my big cousin John ... I get stuff off him.

It is worth mentioning here that rolls and pies had never been identified as playpieces before by any informant even though pictures of these foods had been presented. This is a good example of how borderline foods can acquire the status of playpieces in some particular contexts. Here they had been given to Tim and therefore became

perfectly acceptable but he refers to them as "stuff" rather than playpieces.

At another interview Tim arrived with two chocolate monkey sweeties which had been given to him by his pal Mike. Playpieces (almost invariably sweets) are often given to children by adults as a reward. In one school, the investigator witnessed an assistant head teacher distributing a small chew to each of her pupils after the school dinner "for being quiet today".

Some playpieces (again they are all sweet) are associated with special occasions. For their birthday children get cake. At Christmas time in newsagents, the ordinary cheap sweeties are replaced by more expensive ones often consisting of chocolate sweets shaped and wrapped like Christmas decorations, with a bright little string to hang them. The same phenomenon occurs around Easter; simply the style of the chocolate sweets is different.

These latter reasons to have a playpiece suggest that time is an important domain in children's eating experience.

7.2.2 Times to have a playpiece

One striking difference between meals and playpieces is that the meal sub-domain is sub-divided on the basis of time while the playpiece sub-domain is not. An attempt was made to discover whether children preferred some kinds of playpieces more than others at certain times of the day but no such preference could be found. Instead it came out clearly from the interviews as well as from the observations that children like to have their favourite playpieces at any time of the day except meal time. This was expressed in a rather complex and indirect manner, however.

Int.: I know you have playpieces at break time, in the school playground in the morning. What are the other times when you can have a playpiece, or children like to have a playpiece?

Lynn: Well, sometimes, but not ... it's hardly ever, we have them between meals but that isn't often and after meals ... <u>after meals</u> ... apart from breakfast.

This informant was from a private school and her life appeared to be highly structured by her parents with probably few opportunities to eat between meals. Yet she dissociated times to have a playpiece from meal time.

Karen, from the other private school, expressed this same idea but went further in illustrating the lack of time structure in children's eating:

Int.: Can you tell me when children have a playpiece?

Karen: After tea. When you're away out ... in parks ... on your bike ... in the car ... running.

None of the informants used hours to tell the time. Interestingly they seemed to organize the time concept by linking different parts of the day to either places or activities. Expressions such as "school time", or "home time" were heard among children; they were using two important places in their life to divide time. The two activities used by the informant here (cycling and running) are two forms of play. Play is an important activity for children and it is therefore not surprising to hear them use play to identify different times of the day as can be seen below:

Int.: Now, I would like to know when you can have a playpiece.

Tim: At playtime (without hesitation).

Int.: At playtime. And when is playtime?

Tim: Hum ... This is playtime now. (All the interviews were done after lunch)

Int.: (...) Is there another time of the day that is playtime too?

Frank: Yes, there's ...

Int.: I think in the morning there is a break.

Frank: Yes. There's a morning size one. There's a big one and yes, yes there's a little baby one at the end of the day. (...)

Int.: And if you have a packet of crisps in the evening after your supper while you watch T.V. ...

Frank: Yes

Int.: ... is it a playpiece too?

Both Tim and Frank: Yes!

Int.: But it's not playtime then.

Frank: No (with hesitation and somewhat puzzled).

Tim: That's night time.

Int.: But it is still a playpiece? You would say you had a playpiece?

Tim: Han Han.

In this last instance, the investigator was wrong to suggest that the time spent watching television after supper was not playtime since children can always play unless they are busy doing schoolwork or eating a meal. In other words one can have a playpiece at almost anytime, because there is no particular time to play. This lack of structure in children's eating became even more evident when their use of the spatial semantic principle was explored in relation to having a playpiece.

7.2.3 Places to have a playpiece

From the observations and the interviews, it became obvious that the number one favourite place for school children to have a playpiece was the school playground or any other playground. But one can also have a playpiece in the streets, at home, at the bus stop, and many

other places. This domain was explored using photographs of children eating in different settings and probing the informants to name other places as follows:

Int.: We see two boys here on a swing having crisps. Do you do that sometimes?

Tim and Frank: Yes!

Int.: Are there other places where you have crisps?

Tim: A swimming bath.

Frank: At seaside ... At the shows ... In a train.

Tim: In a bus.

Both (competing to name more). Car ... lowry ... van ... caravan.

Int.: Who can find another one?

Frank: Me! And in your house.

Tim: In a shop. In the class.

Frank: In a bath ... you can have sweeties.

Tim: I take a lollipop and a packet of nuts to the bath (...) You can eat in the corridors.

An attempt was also made to find out if there were some places where children could not have some kinds of playpieces. Such restriction did not seem to exist except that, as mentioned earlier, some kinds of playpieces need to be in a small packet, especially drinks. Here again, play emerges as the main underlying concept for organizing the domain of places, as in the following example:

Int.: What are the other places where you can have a playpiece?

Frank: Hum ... At toy school.

Int.: At ... toy school?!

Frank: Yes. That's where ... we were there ... playschool.

Int.: Oh! Playschool. Is it another school? (Frank nods) That's another building from this one.

Frank: Yes, but it's a baby one, and this is a big one.

The temporal and spatial semantic principles emphasize that play is a central value underlying children's eating. This fact pervades their ways of eating to the extent that eating and playing become almost amalgamated.

7.2.4 Ways to have a playpiece

Whenever possible, the investigator had her lunch with the children who were entitled to the school dinner. They were invariably seen to compete for the privilege to serve, rushing to the dishes and serving spoons to be able to distribute the food to other children. This reveals a need to participate actively in the eating experience rather than simply being fed. If they could have manipulated the food directly with their hands they would have, but, as this was unacceptable, they were compensating by handling the utensils instead. Manipulating food becomes possible at playtime after the school dinner and can be used as a means to distinguish various sorts of playpieces as in the example below:

Tim was eating various sweeties bought for him by his cousin John. Frank was present too.

Int.: I've never seen those before. What are these?

Frank: Some are bubblies and some are chews. I think that's a bubbly.

Tim: (Pressing it against his head behind his right ear) It's a chew.

Frank: It's a bubbly.

Int.: What do you do Tim when you put it there? (Imitating his gesture).

Frank: 'cause he tries to break it.

Int.: And what would a chew do?

Tim: It would break if you tried to bend it.

The combination of eating and playing is better seen in Frank's description of how to eat Smarties and Maltesers:

Frank: ... You can sook them. There's crispy funny face and there's holes. It's the same. They're chocolate crunch from the holes too. You can suck the chocolate, then, after that you can suck the crispy thing.

Sucking (Tim and Frank often said "sooking"), crunching and chewing were the three words most often used by children to explain how various playpieces are eaten. Tim and Frank had just grouped all the illustrations of sweeties and were asked how they would eat them:

Int.: You told me that you call them (referring to a different set of pictures) 'chews' because you have to chew them to eat them. (...) What do you do when you eat the sweeties? How do you eat them?

Frank: You can suck this, this, this, and this, right? The rest ... chewing.

He had differentiated the sweeties as follows:

You chew	You suck
Marshmallows (2)	Chocolate ball
Pair of glasses	Chocolate monkey
Jelly man	Chocolate teddy bear
Dummy	The pig

These three ways of eating match the physical development of children of that age for it is when they are 6 to 7 years old that children loose their baby teeth and they probably feel an urge to bite as they did when they were growing them. This was clearly stated by Lynn (aged 6 years 6 months):

Lynn: (Taking the picture of an apple) That apple looks delicious. I wish I could bite.

Int.: You like apples?

Lynn: Yes, but not when I have this (pointing to the space of a missing tooth lost a few days before). The gums ache. When I bite on it, it hurts the gums. I wish all my teeth would just come out and grow in soon so that I could bite properly

> instead of having to (recording unclear) right into my teeth to get at it. (...) For Halloween, mummy bought a toffee apple and I could only eat half now, because my tooth was aching, my space was aching, after eating half.

Biting in fact, is almost a more general term for sucking, crunching, or chewing, and children do not use it only when talking of hard or chewy foods. One eight year old girl reported during the 24-hour-recall interview that she had had "a banana to bite" after her dinner.

These contrasts between children's eating (having a playpiece at playtime in the playground) and adults' eating (having a meal at mealtime at home or in school) could be identified in practically every one of the 24-hour-recall interviews. Also, as mentioned in the discussion of hypothesis No. 2, there exist clear differences between social classes. The two recalls reported below illustrate these facts; they can be considered typical. The money allowance of the pupil from the depressed area is exceptionally big but, as seen in Chapter 6, it is typical for underprivileged children to receive relatively large allowances.

Girl, 8 y.o. in Priv.L.D/L.P. School

1. Breakfast:
   Porridge with milk and sugar
   Cup of tea with milk and sugar
   One brown bread toast with peanut butter and strawberry jam.

2. Morning playtime:
   One apple

Girl 9 y.o. in Dep.L.D/H.P. School

1. Breakfast:
   One toast with margarine and cheese
   Cup of tea with milk

2. Morning playpieces:
   One Fizz Bomb
   Two Bubble gums wrapped with a clown on wrapper
   Two lollipops (unwrapped)
   10p worth of Armay tablets
   One packet of Golden Wonder Salt and vinegar crisps

Girl, 8 y.o. in Priv. L.D/L.P. School (Cont'd)

3. Packed Lunch:
One round of bread sandwich with margarine and liver paste
A small flask of hot orange Squosh
Salted peanuts in a small bag
One Yoyo chocolate biscuit, mint flavour

4. After school with mother and sisters at home:
Cup of tea with milk and sugar
One Rich Tea biscuit

5. Teatime:
5 Brussel sprouts
One boiled potato
One slice of hot lamb with gravy
A small glass of milk
One banana

6. Bedtime:
Cup of tea with milk and sugar
One Rich Tea biscuit

Pocket money: None

Girl, 9 y.o. in Dip.L.D/H.P. School (Cont'd)

3. School dinner:
Pie
Boiled potatoes
Peas
Rice pudding with plums

4. After school dinner in the playground:
One bubble gum
One lollipop
Armay tablets and crisps (all saved from the morning playpieces)

5. At about 2 p.m. in the classroom:
School milk (usually taken before the morning break)

6. After school at home:
A bowl of soup

7. Teatime:
Chips
Pie
Beans

8. Bedtime: ("Supper")
One toast with cheese
Cup of orange Squosh

Pocket money: 50 pence every Saturday and Sunday plus £2.00 every Monday

While none of the children in the two schools of the underprivileged area had taken a packed lunch to school, this was often the case in the two private schools. Comparing the packed lunch and the school dinner reported above, we can see that the former contained two "borderline foods" and two playpieces while the latter consisted of "meal-type" of foods only. From the point of view of their culture of childhood, the pupils getting the school dinner instead of a packed lunch are clearly disadvantaged. The full meaning of this assertion cannot be appreciated unless the cultural themes organizing children's eating are identified and understood.

7.3 Eating Must not Interfere with Playing

Play emerges clearly as a central value in children's eating and not only because "their" foods are called playpieces that are eaten at playtime in the playground but also because they can often be seen to play with food. It was thus hypothesized that ways to play with food could be another domain of children's eating. Before discussing this domain it is worth examining briefly the nature of play.

7.3.1 What is play?

Trying to define play, Garvey (1977) admits that "it has become increasingly clear within the last decade that it is impossible to define play as a particular type or set of actions". (p.11) However, she listed five characteristics generally considered critical by researchers:

1. Play is pleasurable, enjoyable. Even when not actually accompanied by signs of mirth, it is still positively valued by the player.

2. Play has no extrinsic goals. Its motivations are intrinsic and serve no other objectives. In fact, it is more an

> enjoyment of means than an effort devoted to some particular end. In utilitarian terms, it is inherently unproductive.
>
> 3. Play is spontaneous and voluntary. It is not obligatory but is freely chosen by the player.
>
> 4. Play involves some active engagement on the part of the player. (...)
>
> 5. Play has certain systematic relations to what is not play.
>
> (p.10)

It is this last elusive characteristic of play and the fact that it is linked with creativity (Hutt, 1966), problem-solving (Sylva, 1976), developing intellect (Piaget, 1951a and b), and other aspects of child development (Sluckin, 1980) that justify researchers' interest in it. According to Piaget (1951c):

> ... There are three main types of structure which characterize children's games and determine their detailed classification. There are practice games, symbolic games, and games with rules, while constructional games constitute the transition from all three to adapted behaviours (p.110).
>
> He linked each of these types with a developmental stage:
>
> While mere practice play begins with the first months of life and symbolic play during the second year, games with rules rarely occur before stage II (4 - 7) and belong mainly to the third period (from 7 - 11) (p.142).

Symbolic play includes pretending which was found to be the predominant (in fact almost the only) form of play when the domain ways of playing with food was explored. This finding is consistent with Piaget's classification since the informants who participated in the present study were aged between 5 years 8 months and 6 years 6 months.

7.3.2 You can kid on you're really ...

To discover children's ways of playing with food, a total of 37 illustrations of various playpieces and borderline foods were utilized. The informants were presented with groups of these images and

were asked if they played with these foods and, if so, how. "To kid on" or "pretend" was the phrase most commonly used by them to describe their play. Garvey (1977) defined pretending "as a voluntary transformation of the Here and Now, the You and Me, and the This or That, along with any potential for action that these components of a situation may have" (p.82). According to her, pretending:

> ... is perhaps one of the most complex kinds of play conducted in childhood since it is likely to encompass most if not all of the resources at a child's command and to integrate them into a whole. The principle of integration is some notion or idea, often one that can be named by the child, such as 'Playing house' or 'Cops-and-robbers' (p.79).

Many sweeties and crisps are obviously replicas of familiar objects or animals meant to assist children's imagination. Hoola Hoops crisps are shaped like rings and used as such by children. When this observation was reported to Lynn, she commented:

Lynn: I know. Hum, that's what children usually do with those ... and then bite their fingers where it is! I always do it! ... It's quite fun! ... They are usually apart, so you can put them on your fingers, so you bite them a lot.

She also played with Farmer Brown crisps:

Lynn: 'cause all the crisps in it are made like animals! They look like animals!

Int.: Is that right?

Lynn: You can go and make ... hum, and play with them, making them say noises ... like a cow says one thing 'Moooh!'

With a sweetie shaped like spectacles, Frank said you can "pretend they're real glasses!" and using the illustration of the Funny Feet ice lolly he put it at the tip of his right foot saying: "You can kid on that's your foot just like this ... then you hop on a log ... you kid on it's a real foot." One can also pretend that an orange or an apple is a real ball and you can do it "'cause it's got skin on it ... in case you drop it."

Garvey (1977) stated that:

> ... when children first begin to play with objects, realistic replicas assist in their progress towards more imaginative deployment and combination of objects in pretend play.
>
> After a child has learned how to make-believe, however, less[1] realistic objects appear to facilitate make believe play. They afford more scope for inventiveness and imagination, permitting the child to transform them to suit the occasion (p.49).

The informants displayed such inventiveness several times. With Space Dust Lynn explained with great excitement:

Lynn: You can play with this. You can pretend they make you take off.

Int.: Is that right?

Lynn: You can <u>pretend</u>!

Again about Space Dust, Frank said:

Frank: The sherbet is the bride's paper[2]. Here comes the bride! (singing) All come when you're doing ... it makes a funny noise, like crash ... crack (trying to describe the weird crackling sensation felt when eating Space Dust. He gets very excited as he does it).

Int.: So, you pretend you are at a wedding when you eat the Space Dust.

Frank: Yes. Then you throw the paper up.

With Outer Spacers crisps Lynn assured "you can pretend you're in a space ship" while Frank imitated a frightening monster as he would do while eating Monster Munch: "Sometimes I put each Monster Munch on each finger and I say "Grrr ... I'm a monster ... Grrr". He also explained how you could change the paper wrapper of a Milky Way into a paper crown and crunch sweetie cigarettes to "make them, hum, rain coming down". Children's imagination often shifts to sheer fantasy as in the instance below where Frank was put in the situation of having

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[1] in italics in the original text.

[2] It is worth mentioning here that these interviews were done a few months after the Royal Wedding.

to convince Tim to buy an ice lolly instead of an apple:

Frank: 'cause the apple's got seeds in it and if he takes the seeds, well, he could grow an apple tree inside (He is doing the opposite of what he had been asked here).

Int.: Well, that would be a reason to buy an apple then ... instead of an ice lolly, because you cannot grow an ice lolly from the stick, right?

Tim: No, you would grow a stick tree, full of sticks!

In this last instance the investigator was abruptly brought back into children's world.

The fact that only images of foods were used for these interviews rather than the real products restricted the informants' spontaneity. This became obvious when Tim and Frank played with genuine jelly worms, a dummy, and other sweeties which Tim had bought to mark the end of the interviews:

Frank: (Taking a jelly worm and making it crawl, he said:) I don't want you. You're a bird. (Both Frank and Tim forgot the presence of the investigator and played their respective role of bird and worm. Then Frank took the dummy)

Frank: I could suck you.

Tim: Give me the dummy.

All this pretending type of play provides a cue to explain the apparent contradiction between the disregard for manners that children often display and their preoccupation for hygiene. Play (and particularly pretending) relies on a tacit, mutual agreement between partners as to what interpretation should be made of a particular context. Hardman (1974) maintained "that the contexts which define the meanings of the biophysical environment are the imaginary or 'fantasy' situations agreed upon by the group" (p.180). Garvey (1977) described some of the ways children have to signal the

transition between non-play and play activities. When a child chooses a food item that she/he can have later as a playpiece, most of the time the context tells her /him "This is to eat" and the hidden meaning is "not to play". Hygiene then is an important dimension. However, when, through a whole set of cues from the environment, the context says "This is play", the inhibitions fall and so does the preoccupation for hygiene. The interpretation of a given context varies from child to child, i.e. what is play for a child can be non-play for another one who would then exhibit in his/her eating the inhibitions characteristic of adults. This emerges from the excerpts below contrasting the attitude of Lynn (6 year 6 month girl attending a private school) and of Frank (5 year 8 month boy from the under-privileged area) towards drinks as foods to play with:

Int.: Do you play with drinks?

Lynn: No!

Int.: No?

Lynn: Anyway, can you guess what would happen if you would? ... if you did? You would probably spill it, if you played with a drink.

Int.: Yes, and what would happen then?

Lynn: Aaaoh, yerk!

Int.: Yerk. You don't like that.

Lynn: I can't imagine!

Consider now Frank's attitude:

Int.: We have three different kinds of drinks here. Do you play with those sometimes? (...)

Frank: Yes!

Int.: You would. Can you tell me what kinds of things you would do to play with them?

Frank: Put it in your mouth ... then spit it out like this ... ppssoohh!... and that's the same with this (pointing to the picture of another drink).

Int.: Oh, yes! ... yes, to water someone for example.

Frank: Yes ... like watering a plant ... that's what I do! (Sounds very proud here).

Frank would not consider playing at "watering a plant" when he drinks a cup of tea with his parents at dinner time but when he is having a bottle of a soft drink with his friends in the streets, his interpretation of the context is "This is play; so, I can afford to make a mess". Lynn, on the contrary, would interpret the context differently: "This is to drink, not to play". This contention that the play context reduces inhibitions was best illustrated when children said how they would play with sweetie cigarettes:

Int.: (Using pictures of various foods including a photograph of a packet of sweetie cigarettes). Can you play with other things?

Lynn: What's that?

Int.: These are cigarettes, sweetie cigarettes.

Lynn: Oh, ... well, ... hum ... you could pretend you are smoking a cigarette.

Answering the same question, Frank replied: "You can kid on you're really smoking one of these cigarettes." It is obvious here that an activity that is normally forbidden to children (smoking) becomes perfectly acceptable within a context of play, i.e. it's all right if you're only kidding!

At this stage, the investigator cannot resist making a digression to link some findings of the present study with the phenomenon of cigarette smoking among primary school children. Attempts to smoke appear diffused throughout childhood but it is towards the end of primary school and the beginning of secondary school that some children become regular smokers (Bernard, 1979). By then, pretending as a form of play has been replaced by games with rules. Pretending smoking

sweetie cigarettes is supplanted by really smoking a cigarette. This shift from the culture of childhood to the culture of adulthood is facilitated by the newsagents which are the shopping centres of children. When the domain "places to buy a playpiece" was explored, it became evident that children favoured the newsagent as a place to buy playpieces. This can be explained by the fact that newsagents are the only shops that carry all possible kinds of playpieces while they sell occasionally some borderline foods and rarely meal-type foods. In all other kinds of shops it is the opposite. In a newsagent, children do not only find playpieces but also toys; they do not only see sweetie cigarettes but also <u>real</u> cigarettes, available for them to buy when they have gone through the stage of <u>pretending</u> to smoke. The Incredible Hulk, Batman and Robin, and other brands of "candy sticks" are not called sweetie cigarettes by the confectioners who make them but they are obviously meant to be perceived as such by children. With their white colour and a red tip, their shape and size similar to those of real cigarettes, their packet presentation, the so-called "candy sticks" are perfectly suitable for pretending smoking and that is what children do with them.

Pretending, although very important, is not the only way children play with food. They also enjoy testing their physical skills like Tim who would "fling" a bubble gum up "and it would fall right down in your mouth". Blowing bubbles from a bubble gum is another skill that Lynn had not mastered yet as she explained when contrasting chewing gums and bubble gums:

Lynn: Hum, you can blow bubbles with that one 'cause that's bubble gum and you couldn't do it with that .... You see 'cause when you suck that ... it's made in round balls for a reason ...

> it goes flat and you get it on to the end of your tongue (imitating the action) and you make a huge bubble ... I haven't learned to do that yet.

Many wrappers of crisps and sweets present a fantastic short story, a pun, or phrases that challenge children's ability to read at the same time as they foster their inventiveness.

This discussion of ways of playing with food shows what children are deprived of when they are given only food of the meal type. However, if play is central to children's eating, it is not the unique value.

7.3.3 Play is not all there is to a playpiece

Four other cultural themes were eventually discovered. Of those, two were not explicitly mentioned by children but they are implicit in children's food choice.

7.3.3.1 Sweet foods are the best

Sweetness is highly valued in Britain, more so than in other countries, according to James (1979):

> Sweets - as in 'Ye Olde Sweete Shoppe' - are an entirely British phenomenon. There is no equivalent abroad and the British sweet industry, in its production of a very extensive range of confectionery, seems to be unique. (p.84)

The popular press has reported the enormous successes obtained by companies who cater for the British sweet tooth with confectioneries such as the Mars Bars or "Skull Crushers", this latter being a skull-shaped sweet sold by the million to children (The Observer 27 February 1983). Birch (1980) found that, in her group of American children, sweetness was superceding familiarity as "the primary dimension underlying preference from 3 to 4 years" (p.32).

The sheer size of the sub-domain sweets in the taxonomic definition of foods reveals how important sweet foods are in the eyes of children. The traditional "Sweete Shoppe" mentioned by James appears to have been replaced by the newsagent which most informants called the "sweet shop". Often they tended to confuse sweets with playpieces and, when asked to select pictures of places[1] where they could buy a playpiece, the informants looked for shops where they could find sweets: "That's a chip shop, said Tim, you can get sweets out of there".

In a school nursery where the children were getting food in the afternoon as well as in the morning, the educator in charge said: "They are quite happy to eat what we give them but obviously prefer sweet snacks". In his study of children's experience in the school playground, Sluckin (1980) identified three goals that children pursue: participation in a group activity, obtaining sweets, and obtaining friendship. The same author also found that children bought with sweets friendship or their admission into a game:

> Another important remedial strategy is <u>bribery</u>. Anthony told me he promises others to 'let them come to his house', but more often bribery involves sweets, since these are both a desired and scarce commodity in the playground (p.172).

Food (not only sweets) was more often seen to be simply shared between friends than involved in bribery.

7.3.3.2 Friends share foods

Although only one informant, quoted at the beginning of this chapter, mentioned explicitly that he bought some food for himself and

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[1] A set of 29 pictures listed in Appendix XX was used for this purpose.

other food "to share with my pals", food-sharing among friends emerged from many observations in various contexts. Children were often seen to share Chewits, Rolos, Polos, Jelly Babies, sweeties from a "wee bag" or all sorts of crisps. All these foods have two important characteristics in common: they come in a small packet and are made of small pieces of food ideal for sharing. Other authors have pointed out the importance of food-sharing among children (Dyson-Hudson and Van Dusen, 1972; James, 1979; Sluckin, 1980).

Two more themes were identified when the domain "reasons to choose a playpiece" was explored. Pretending was exploited as a strategy to disclose what these reasons were. For example, the informant could be told: "Let's pretend you are in a shop where one can buy different kinds of playpieces. You are in that shop in a corner where you can see what people buy. Three children come in to buy something. One buys this, another buys this, and the third one buys this (an illustration of food was used in each case). Which one makes the best choice? Why?" In these instances, the set of three pictures was chosen so that the items would contrast in at least one obvious dimension such as one dry food and two drinks, one recommended food and two non-recommended ones, one savoury and two sweet foods, etc. Another technique consisted of placing the informant in a position of having to convince someone to choose a non-recommended food rather than a recommended one.

The kinds of reasons given by the informants from a disadvantaged school and those given by one informant from a private school were found to contrast sharply. While the underprivileged children seemed preoccupied to get the longer-lasting playpiece for their money, the private school pupil had apparently integrated the health education message.

7.3.3.3 You must get your money's worth

Tim and Frank, both attending a school in the depressed area, were evidently preoccupied with the cost of various playpieces and how much they could get for a given amount of money. Tim said he was getting 15 pence every day which he was spending on a combination of crisps and chews or bubblies. At the time of the study many brands of crisps cost 8 or 9 pence a packet. As it was common for children to have 10 pence to spend at a time, there was at least one penny left to buy something else. "If the man (the shopkeeper) hasn't got any chews, said Tim, I'll get these six wee bubblies and 9 p crisps." Looking at the picture of a C.T.N. with a bubble gums distributor outside, Frank spontaneously said: "Bubble gums come out of those and they are two pence."

When asked what difference they made between two food products within a given sub-domain, Tim and Frank often pointed at the number of individual pieces available. Contrasting two kinds of chewing gums they said:

Tim: You get seven in these.

(...)

Int.: And you have two there.

Tim: Yes. They're for one p, and if you give them 4 p, they'll give you four.

The number of biscuits he could find in a packet of McVitties chocolate biscuits did matter to Tim: "You get 45 in there."

Having several pieces of food in a packet allows you to save some of them for later consumption. Many children mentioned they had saved parts of their playpiece to have after the school dinner. Again a packet or at least a wrapper is very useful since the food can be hygienically kept in them.

Finally, Tim and Frank valued more the foods that take longer to eat. Asked to convince Tim to buy Chewits instead of a Muesli Bar, Frank's argument was: "'cause that's too quick for eatin' (speaking of the Muesli Bar) ... 'cause you can only crunch that ... and you can chew them (the Chewits). Then chew is longer but crunch is much faster." Similarly, when he was asked to convince Tim to buy a Star Bar instead of a chocolate milk drink, Frank chose to do the opposite "'cause it's crunching (The Star Bar) and you suck that (the drink) and that's even longer." This dimension was so important to him that he could not see any reason whatsoever why Tim should buy the attractive orange drink in a monster-shaped container rather than a carton of pure orange juice: "Well ... I would let him choose his own 'cause a drink is the same ... longer as a drink." Tim's only argument to persuade Frank to choose Tooty Frooties instead of a packet of nuts and sultanas was: "Peanuts only last two minutes. You get 20 or 45 in them (Tooty Frooties) and you've only got 17 in there (nuts and sultanas)." Arguing on the accuracy of his estimate would be irrelevant as it is evident that if the child perceives he/she gets more for his/her money, that perception will play a determinant part in the choice.

The meaning of the following incident can now be fully appreciated:

(In the middle of an interview with Tim and Frank, a boy came to "deliver" the sweeties that Tim had asked him to buy at a nearby sweet shop.)

Int.: So, you gave some money to your friends and they went out to buy those things for you, hey?

Frank: 15 pences.

Tim: <u>Five</u> I gave them.

Int.: You gave them five and how much do these things cost?

Frank: They're one p each.

For five pence, Tim had got, in a tiny paper bag, one strawberry chew, one wrapped, cigarette-shaped bubbly, one marshmallow, one cola bottle chew and one sweetie. For five pence he had bought sweetness in a variety of shapes, colours and textures, that would keep his mouth busy for a long time or that he could trade or share with his pals, play and fantasize with, if he wished, or simply save for later in his "wee packet". Who could honestly ask for more after a school dinner?

Never did Frank, Tim or any other child interviewed in the two disadvantaged schools, express any awareness of the nature of foods in terms of their desirability for one's health. The Snappy Smile Week appeared practically unnoticed there as, apart from a couple of posters hanging near the main entrance of the school, there did not seem to be other indications of it. Certainly none of the children ever mentioned the event; this was not the case in the two private schools.

7.3.3.4 Eating for health

There was an obvious effort in the two private schools to encourage children to eat recommended foods. Although the interventions were not systematically assessed, some of them were easily identifiable. In one of the private schools chips were available on Tuesdays only. In this same school, during Snappy Smile Week one could not only see several "official" posters but also some made by children that appeared related to the event. The pupils had some teaching with homework to do on the food groups. The tuck shop of that school was located in the secondary school section of the school complex and was unaccessible to primary school children. In the other private school, primary school pupils had access to the tuck shop after

lunch only. In both private schools, children had either a packed lunch or a lunch selected in the school cafeteria where crisps and sweets were unavailable. There was on the contrary a variety of yoghurt, fruit, raw vegetables, nuts and other recommended foods. Overall, the private schools' environment appeared supportive of the "eating for health" message. It was therefore not surprising to find that Lynn, attending the private school isolated from shops, was aware of the nature of various playpieces and valued more those believed to be better for health.

When she classified foods into different groups, Lynn said once: "They're all chocolate bars (...) which we are starting to stop having because it's Snappy Smile Week. So, we're trying to eat good breaks and this isn't good for you." Looking at a picture of children eating various playpieces in a school playground she said:

Lynn: She's got an apple! (pointing at the only child on the picture who was not having crisps or sweets).

Int.: Yes. And why do you think she's eating an apple and not crisps or chocolate?

Lynn: Hum ... that's because it's good for her teeth!

Int.: So, that would be another reason for buying an apple rather than buying crisps or chocolate.

Lynn: Crisps are good ... aren't too bad for your teeth ... but chocolate is because it's full of sugar.

Although she tended to classify playpieces in terms of "good for your teeth" or "bad for your teeth", Lynn was beginning to develop a broader and more complex conception of the relationship between food and health. She could not always explain this relationship, however. When asked to convince an imaginary friend to buy crisps instead of walnuts and dates, she replied:

Lynn: That's the other way around! These (the walnuts and dates) are better for you.

Int.: In what way are they better?

(She was obviously puzzled with this question and tried to avoid answering by playing with the illustration of Monster Munch before concluding,)

Lynn: Well ... I ... well. Nuts are good for you.

At other times though, she was more explicit:

(Lynn was placed in a pretend context and had to tell which of three girls had made the best choice.)

Lynn: This! (Just Juice orange juice) ... For her teeth ... This is Just Juice as you can see ... only juice.

Int.: It's only juice.

Lynn: Those two (a carton of orange drink and a packet of Monster Munch crisps) would be ... would have sugar and colour in them.

Towards the end of the ethnographic interviews, the four informants were administered a true-false questionnaire (See Appendix XXI .. The number of informants who answered true or false is written beside each question). The informants' replies to this questionnaire support the identification of most dimensions of contrast and of at least two cultural themes. Play was said to be a central value in children's eating. It is interesting to examine the answers to questions 10 and 16 in relation to this contention. We can see that the informants do not necessarily associate eating with playing. A good playpiece is not so much a food item you can play with as much as some food that is compatible with play, i.e. EATING MUST NOT INTERFERE WITH PLAYING. From the findings of the present study, this emerges as the major cultural theme and the four others appear more or less secondary.

Other factors were also found to have some influence on the eating behaviour such as parents' authority restricting choice to recommended

foods, falling teeth preventing the consumption of certain foods, or peers' pressure as illustrated below:

(Tim was asked to convince Frank to buy Tooty Frooties instead of nuts and sultanas).

Tim: Frankie, don't buy peanuts, buy Jelly Tots! (Tim sounds very authoritarian).

Frank: (Speaking to me) That's what we would say. (Then speaking to Tim). There's raisins in there.

Int.: There's raisins as well; that's a good argument. What do you answer to this? (Speaking to Tim).

Tim: Frankie, if you don't take them (The Tooty Frooties), I'll take your money off you! (Very firmly).

These, however, were not found to play a crucial role in the shaping of children's values.

7.4 Limits and Conclusion of the Ethnography

Three limits of the study will be discussed here: the number of informants involved, their age group, and the strategies used.

7.4.1 The number of informants

As mentioned earlier only seven informants participated in the proper ethnographic interviews; three of them dropped out at the beginning and one turned out to be a poor informant rarely commenting what she was doing. Given this small number of active participants it is possible that some important dimensions of contrast between foods or even some cultural themes went unnoticed while those discovered may apply to marginal groups of children only.

7.4.2 The age group of the informants

While the 24-hour-recall interviews were done with primary school children of all age groups, the ethnographic interviews involved only pupils from grade 2 who were aged between 5 years 8 months and 6 years 6 months. Clearly, it was not possible to identify if and how values shift from one age group to another. It was mentioned in Chapter 6 that children aged 7, 8 and 9 were found to be the most "childish" in their eating but this could not be verified in the ethnography. It would have also been useful, bearing in mind the ultimate goal of the present study, to discover at what age children stop playing with food (pretending) and to see if this is accompanied by a shift towards adults' eating.

7.4.3 The strategies used

When they were first presented with sets of illustrations of a wide variety of foods, the informants were not asked to group them in whatever way they wanted. Instead, they were provided with a frame of reference such as "foods you have had before and foods you have never had" or "foods you buy for yourself and foods you are given at home" and finally "playpieces and non-playpieces". Consequently, even though the playpiece concept was fortuitously discovered from data spontaneously communicated, it was nevertheless suggested as a frame of reference to contrast foods. Perhaps the informants would have disclosed another major way of distinguishing foods.

The fact of using illustrations instead of the real products has already been mentioned as a limit. It certainly restricted children's spontaneity and sometimes lead to confusion as some of the pictures were of poor quality.

Finally, once the playpiece concept had been discovered, it might have been more appropriate to explore further the contrasts between meals and playpieces rather than to concentrate at an early stage on playpieces and borderline foods.

7.4.4 Conclusion of the ethnography

Although the limits described above must be kept in mind when the findings are considered, several factors indicate that the dimensions of contrast between foods and the cultural themes identified are relevant, meaningful and significant. They are relevant because what was discovered through the analysis of the ethnographic interviews can be verified wherever children are seen eating. In fact, almost all the observations done support the findings of these interviews and so do many comments by teachers or parents. They are meaningful because they match and complement what is known about children's development from various disciplines such as psychology, physiology, or sociology. Finally, they are significant because they substantiate the findings obtained from the 24-hour-recall interviews. Such consistency cannot be attributed mainly to chance or researcher's bias.

CHAPTER 8

IMPLICATIONS FOR ACTION AND RESEARCH

The present study originated from a desire to collect pertinent data that could guide future strategies of intervention. Before discussing the implications of the findings and some suggestions for further research, it is useful to return to the purpose of the project and to examine its contribution to the problem.

8.1 Retrospective

The problem at the origin of this thesis was a lack of effective strategies of intervention regarding inadequate food consumption among primary school children. Early observations had led the investigator to suspect that this inefficacy of preventive strategies was attributable to their failure to consider children's nutrition from a multidimensional and dynamic perspective. An ecosystemic model was thus adapted which incorporates the three dimensions believed to be determinant of the behaviour namely, the environment, the consumer of foods with bio-psychological and sociocultural characteristics, and the interactions between environment and consumer. Furthermore, it was hypothesized that these dimensions contributed to developing and reinforcing among children the set of values underlying their behaviour. This set of values and their expression by children was referred to as a culture of childhood; children's eating as opposed to adults' eating was regarded as a component of this culture.

Because it was impossible in a single and relatively small project to encompass all the variables included in the ecosystemic approach

suggested, the present study addressed itself only to a few elements of the model. These were:

1. The school system. An attempt was made to measure the availability of food in the school environment and its influence on patterns and quality of consumption.
2. The technological system. Foods with their various physical characteristics were seen as products of this system. It was hypothesized that the foods fitting into the culture of childhood would share some physical characteristics.
3. The socio-cultural system. Aspects of the socio-economical dimension were assessed through a comparison of pupils attending two private schools with pupils attending two schools from a depressed area with regard to their food consumption (patterns and quality) and the amount of pocket money available to them. Through ethnographic interviews, children were given the opportunity to present the cultural dimension from their own perspective.
4. The patterns of food consumption. These were seen as part of the output resulting from the combined forces acting upon the child. Again some patterns of eating were associated with childhood.

8.2 Contribution of the Present Study

As the findings were reported in relation to each hypothesis in Chapter 6, and as Chapter 7 presented the ethnographic perspective, the contribution of the present study will only be summarized here.

Regarding the availability of food in the school environment, it was found that while the number of shops had no influence on food consumption, their proximity to the school was related to the quality and time

of consumption. Proportionately more foods reported by children attending the schools close to food shops were of the "Non-recommended" "Mixed" or "C.T.N.-foods" categories and had been consumed "Between meals". The tendency for children attending the schools surrounded by shops to eat more frequently was present but not statistically significant. Contrary to what had been originally thought, it is not during weekends and holidays but on schooldays that children are more at risk of eating "C.T.N. foods" between meals. Pocket money was found to be related to the frequency, time, and quality of consumption although the correlation between the consumption of "C.T.N.-foods" and the amount of money received was not statistically significant. In comparison to the pupils attending the two private schools, significantly more respondents from the two schools in the depressed area reported "Big" money allowances.

Children attending the two schools in the depressed area were found to have eaten more frequently than those from the private schools. They also reported proportionately more foods consumed between meals and in homes other than their family home. They reported a smaller consumption of fruit, vegetables (if the school dinner is excluded), and milk but a bigger consumption of chips than the respondents from the private schools. However, they were not found to have consumed more "sweet foods", neither did they report more foods eaten in the absence of adults than the pupils attending the private schools. This latter finding suggests that, contrary to what was originally thought, underprivileged children are not left on their own more so than their relatively privileged counterparts as far as food consumption is concerned.

The physical characteristics of the foods consumed in the absence of adults were found to contrast with those of the foods consumed in their

presence. "Children's foods" were found to have "strong tastes", hard, effervescent or crispy texture, and appealing shapes. Proportionately more of these foods had been eaten at room temperature or frozen than warm or cold and proportionately more of them were the size of a mouthful or smaller than of a bigger size. The results regarding the visual qualities of children's foods present some contraditions. If, overall, children's foods possess visually attractive features such as bright colours, entertaining wrappers or amusing shapes, there are indications that these qualities play a secondary role in the actual selection of foods.

Foods consumed in the absence of adults were also associated with specific patterns of eating. Proportionately more of those foods had been eaten between meals, in unstructured settings (e.g. street, bus, school ground) and without the use of a dish or utensil than at mealtime, in structured settings (e.g. homes, school refectory) and using dishes and utensils. Children aged 7, 8 or 9 years were found to be the most "childish" in their patterns of eating, i.e. proportionately more of the foods reported by that age group had been consumed between meals, in unstructured settings, and without using dishes and utensils than the foods reported by the two other age groups had been.

The limits of these findings were discussed in Chapter 6 and the validity of the definition of children's eating as being all food consumption done in the absence of adults was questioned. The ethnography revealed that children's eating was "having a playpiece at playtime in the playground" instead of having a meal at mealtime at home. Through the ethnographic interviews, it was found that the central cultural theme underlying children's food preferences is that <u>eating must not interfere with playing</u>.

Other cultural themes appeared to be of secondary importance such as the value of sweetness and of sharing food. While the theme "eating for health" was found to have been integrated by one informant of a private school, the informants of a school in a depressed area seemed to be far more concerned about getting their money's worth. This latter preoccupation was not expressed in terms of buying the most nutritious and healthy food at the lowest possible cost but rather in terms of the longest-lasting playpiece at the cheapest price.

The findings of both Chapter 6 and 7 suggest implications for intervention.

8.3 Implications for Intervention

The findings have implications in terms of the target groups at which the interventions should be directed as well as the nature of the interventions likely to succeed. Priorities should be given to the schools located in depressed areas especially if there is one (or more) newsagent in the vicinity of the school. Children under the age of seven would probably benefit the most from preventive interventions because they have not yet reached a stage of development where an increasing independence from the parents combine with tremendous pressures from the environment to create food habits that become rapidly resistant to change.

The nature of the interventions proposed here is consistent with the ecosystem approach adopted. It is suggested to create contexts conducive to healthy behaviour rather than to try to impose interdictions on food regarded as detrimental to health. This can best be accomplished by fitting interventions into the culture of those to whom they are addressed. Foster (1962) identified five characteristics of culture to be taken into account when introducing technological change:

1. Culture is learned (p.12)
2. A culture is a logically integrated, functional, sense-making whole (p.13)
3. All cultures are constantly changing; no culture is completely static (p.16)
4. Every culture has a value system (p.18)
5. Culture makes possible the reasonably efficient, largely automatic interaction between individuals that is a prerequisite to social life (p.19)

Gifft et al. (1972) discussed the implications of these characteristics for the change of food habits and stressed that "a new element is much more apt to be accepted and successfully incorporated into the culture if it is not incongruous with the existing value system" (p.13). In line with these ideas, two basic principles of interventions are put forward here: (a) to adapt recommended foods to children instead of trying to adapt children to recommended foods, and (b) to fit recommended foods into the patterns of eating of children.

(a) To adapt recommended foods to children

This can be accomplished by giving children foods that are compatible with their value system. Children seem to classify foods along a continuum going from meals to playpieces, these last foods being highly valued. When contrasting meals with playpieces, it was found that playpieces are tasty foods that come in small pieces and that can be kept and eaten at room temperature without having to use utensils or dishes. Playpieces presented in small packets are ideal for sharing or saving for later consumption. The packet helps children to comply with the hygienic habits adults are trying to inculcate. The findings also indicate that hard, crispy and crunchy foods are more likely to appeal to children than soft or semi-liquid ones.

Thus, if the objective is to increase the consumption of fresh fruits and vegetables, these foods should be offered raw, in small pieces (sticks, cubes, etc. ...) and presented in a small bag or packet. From the findings of the game of pretend, the variety aspect seems to play a role in selection. It would appear preferable then to give different fruit and vegetables to different children; this would match their need to play with food and trade them. Trading is impossible if everybody has the same combination of food. It is rarely appreciated that many vegetables are more nutritious and tasty raw than cooked. Since sweetness was found by several studies to be determinant in children's food preferences, fruit would appear to have a better chance of being accepted than vegetables. Again some raw vegetables (carrots, turnips, red capsicum, cauliflower for example) have a slightly sweet taste which is lost in the cooking process. Many raw fruits and most raw vegetables have a crunchy texture and all are best eaten at room temperature, two characteristics that match children's values.

Applying this principle consists basically in moving certain food along the continuum from the meal to the playpiece end by altering their physical qualities. Some food such as spaghetti bolognese or cheese macaroni are irreversible meal foods but undoubtedly they could be replaced by their playpiece (or borderline food) nutritional equivalent such as filled rolls or sandwiches. Giving children foods that match their needs and values is not likely to succeed, however, unless these items are integrated into their patterns of eating.

(b) To fit recommended foods into the patterns of eating of children

Giving children the kind of food suggested above would spare them the need to use utensils and dishes and allow them to manipulate the items

directly with their hands without making a mess. Since a considerable number of respondents reported having eaten between breakfast and lunch, and immediately after school, it seems obvious that they would welcome food at these two times of the day in addition to lunch time; the school dinner nutritional value could be split accordingly.

An increase of the total nutritional value supplied to pupils by the schools located in depressed areas might be worth considering. Regarding the setting of food consumption, it appears that children would appreciate a less structured and rigid environment than the school refectory where they have to remain quietly sitting at a table and complying with rules that restrict their spontaneity.

This approach, in contrast with the health education strategy, can be summarized as follows. Instead of teaching children what to eat, let us pay more attention to their eating behaviour which tells us GIVE US A PLAYPIECE AT PLAYTIME IN THE PLAYGROUND PLEASE. Not lectures!

Attempts were made during the ethnographic interviews at introducing unpopular foods either by offering them as a reward at the end of an interview or asking the informant to assess the item regarding its acceptability as a playpiece. The following foods were used in this manner: a stem of grapes, peanuts and raisins, apricot sundries, monkey nuts (all offered in a small bag), satsumas, and a bar of nuts, dates and grains (wholefood type of snack). Commenting on the peanuts and raisins given to them the week before, Tim and Frank said they had shared these "sweeties" with their friends in the playground. When presented with a small bag of monkey nuts, Frank said spontaneously, "That's a playpiece", and appeared delighted. While he had rejected the photograph of a bar

of nuts, dates and grains in selecting food that could be playpieces, when he was given the actual product to assess, Frank's verdict was "It's a ginger-bread man kind of playpiece". These attempts indicate that unfamiliar and unpopular foods would be perfectly acceptable to children if given at the right time and place, and presented in a way that is compatible with their value system. It is the investigator's contention that such a strategy is more relevant and applicable than interventions inspired from social psychology or behaviourism.

Birch (1981a) suggests to apply social modeling procedures to produce changes in food preferences and states that "if children were routinely exposed to other children with food preferences different from their own, they would begin to broaden the set of foods acceptable to them." (p.S 52) In their own study designed to measure the influence of social-affective contexts on the formation of children's food preferences, Birch et al. assessed the food preferences of a group of 64 pre-school children and assigned the subjects to either one of three experimental groups or to a control group on the basis of the food for which they had expressed neutral feelings. They found that children who had received the neutral food in a reward condition or in a non-contingent attention condition developed a preference for the neutral food that persisted as long as six weeks after the end of the experimental condition. Children in the control group and those in the experimental group where the food had been simply placed in the subject's locker dissociated of any social context, had not changed their neutral attitude by the end of the experiment (Birch et al., 1981b). This project, like many other experimental studies, present two weaknesses with regard to the ultimate objective of finding effective strategies of intervention. Firstly, the rigid experimental design eliminates some

relevant aspects of reality. In Birch et al.'s research, for example, the participating children had been forbidden to give their food item to another child, a quite common practice among children as seen in this thesis. Secondly, the successful experimental conditions are often impossible to reproduce on a large scale. Again in Birch et al.'s study, the two successful conditions consisted of one-to-one interactions between the participating pupil and the classroom teacher who was offering the food following a pre-determined procedure. The application of social modeling principles suggested by the same author does not appear more feasible with large groups in a school setting. The approach suggested in the present study proposes on the contrary to exploit existing patterns, contexts, and facilities.

When a primary school was visited at the very beginning of this study, the assistant head mistress was asked her opinions about strategies of intervention. She replied that "rethinking our school meals" was a priority adding that children seemed to prefer lighter meals and ate oranges and apples when these fruits were given to them. Rethinking the school meal emerges as a major priority and it is useful to examine the origins of this scheme. In his history of the introduction of school meals in Great Britain and United States, Reese (1980) argued that the scheme was intended to re-educate the poor as much as to feed them:

> Throughout the Parliamentary debates that culminated in the Provision of Meals Act, various members of the House of Commons widely discussed the 'educational side' of school lunches and breakfasts. That is, more was at work than the simple notion that children who ate well learned more easily; rather, school meals permitted teachers to re-educate the poor in the more *gentil*[1] and desirable traits of the higher social classes (p.509)

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[1] In italics in the original text.

The author pursued:

> The entire debate over state intervention touched deep-seated feelings about the morality and behaviour of the poor - their inability to choose proper foods, their penchant for misfeeding, their ignorance about how to fold a napkin and wash their fingers. The vital connection between politics, education, and nutrition was apparent as programs were finally implemented in England and America (p.511).

Reese pointed out that the school meals did not succeed in changing children's food preferences nor did the "middle-class accoutrements" adorning the facilities persuade them to mend their ways.

It is argued here that if the school meals failed in modifying children's food preferences, it is mostly because they did not match their values. Also, it must be realized that as long as a poor child is hungry and has a few pennies to spend, he/she will be looking for long-lasting or "filling" food (e.g. hard sweeties or chips) at the cheapest price. Valuing an immediately perceptible gain (relief from hunger at low cost) rather than a long-term benefit (better health through sound nutrition) will only be reinforced as the child becomes an adult. It is therefore important to introduce recommended foods at the right times (i.e. when children are hungry) and to give enough to satisfy empty stomachs. If, in addition, the child can associate these foods with pleasant, relaxing contexts and activities such as playing in the playground, she/he will be more likely to develop positive attitudes towards unpopular foods. Inculcating sophisticated table manners appears irrelevant to adequate nutrition and children have many other opportunities to learn these niceties.

In planning the implementation of the proposed strategy, the resistance to change should not be underestimated. As budget cuts force more and more local authorities to reconsider the provision of the school

dinner, groups are responding vigorously to the threat. The major recurrent argument of these pressure groups is that children need a "warm meal" in the middle of the day. Although there is no rational (let alone scientific) basis supporting this belief, this conviction that adequate nutrition equals a warm meal cannot be overlooked. In such a context, telling parents that the school dinner will be replaced by playpieces provided at playtime, lunchtime, and after school would simply add fuel to the fire. Great care should be taken to avoid giving the impression that something is lost in the process. It might be necessary to begin by offering food at playtime and after school in addition to the traditional school dinner which could gradually be phased out. The dinner itself could be replaced with a "picnic" occasionally. Finally, it must be pointed out that what is suggested here is already existing to some extent in private schools. What is good for relatively privileged children cannot be that bad for those living in depressed areas!

8.4 Suggestions for Future Research

The findings point to avenues for further research both in children's nutrition and in other aspects of their life.

A follow-up of the study as a pilot project to implement the strategy put forward comes immediately to mind. Such a project should be followed by an outcome evaluation. Because the number of participants to the ethnographic interviews was small and not representative of the total population of that age group, further ethnographic work is indicated. Data obtained from informants of different age groups should be compared in order to discover when and how adults' eating (valuing the meal and table manners) supersedes children's eating (valuing playpieces

and unstructured food consumption). The contrasts between the values privileged by children of different social classes with regard to food also need to be further documented.

The hypothesis of a culture of childhood resulting from and maintaining the influences of each component of an ecosystem emerges as a valid theoretical framework to study various life experiences of children. Aspects of behaviour detrimental to health such as cigarette smoking or solvent abuse for example would undoubtedly benefit from this approach. Play was found to be a central value in the eating experience of children and it might be of major importance to other dimensions of their behaviour. The possible link between symbolic play and the acceptability of behaviour inconceivable in a "serious" context seems worth investigating.

CONCLUSION

The present study originated from a sceptical attitude towards health education as a preventive strategy and from a desire to explain poor eating habits among primary school children. An ecosystem model was adapted to approach the problem and it was hypothesized that the components of this model interact to produce a culture of childhood which in turn maintains the interactions. The proximity of shops in the school environment and the type of school attended (private versus in a depressed area) were found to be related to some aspects of food consumption. However, the most determinant factor was found to lie within children's value system and in the central position that play occupies in that system. Play was found to be at the centre of the contrasts between children's eating as opposed to adults' eating. These contrasts were encapsulated in the words children used to divide foods, i.e. meals versus playpieces.

Implications for action and suggestions for further research were proposed.

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APPENDIX I

Interview with one school boy (M)

Tuesday 27th January from 15:00 to 15:30 at the N.R.U.
Sex: M. Age: 11. Grade: Primary 7, private mixed school.

24 hour recall from noon on the 26th until noon on the 27th

Nature and source of food	With whom food was eaten	Where	Approximate time
School meal M. names the foods in the following order: chocolate rice pudding salad "No drink" but adds that he drank a "wee bit" of a friend's lemonade and beer*	Mi, Dr., and Do., (3 close male school-mates) also other kids sitting at the same table.	School cafeteria (see description at the end).	12:00
"bits and pieces of sweets that people gave me" "I normally feel hungry" There is enough food at lunch but "I always feel hungry at school"	schoolmates	In the play-ground at school	This happens whenever shops in school vicinity are open at lunch time + breaktime.
Pack of "Chewits" (strawberry flavoured) Another favourite is "Fry's Five Centres". Chewits were bought at a "sweet, cigarettes and newsagents shop" around the corner from the school*	Was with his 2 cousins who go to the same school.	On the way back home: Had some in the streets + bus	15:20 but M. specifies that he buys that type of food whenever he gets pocket money.

* M. used an unusual vocabulary here probably to make sure that he would be understood by a foreigner. "Lemonade and beer" is called "shandy" and a "sweet, cigarette and newsagent shop" is often called "a tuck shop".

Appendix I (cont'd)

Interview with (M)

Nature and source of food	With whom food was eaten	Where	Approximate time
2 biscuits	Sh. (female cousin)	home	16:00
supper	family	home	18:30
breakfast: cereal, bacon (not usual) + "fresh orange juice"	family	home	7:30 following day

M. says this is a typical day as far as food is concerned except for the bacon at breakfast time.

1) Do you think that other boys and girls of your age eat approximately the same foods?
"Not many eat school dinners". "Many go to cafeteria where they buy chips and other sorts of fried foods".
"school dinners are O.K. but I would not pay for them".
Mentions lack of choice.

2) Activities during meals or other eating time:
Talk with family at home + friends at school during meals. Plays in playground when eats other foods. On those occasions M. explains that he never eats "hot things because you cannot buy them at school: school dinners are served on a plate and you cannot take them out"
Would like food to carry-out.
Says that junior pupils are not allowed to go out of school grounds at lunch-time. Not so sure about the seniors.
How do these activities compare with what others do? "The same".

Appendix I (Cont'd)

Interview with (M)

Food likes:	Food dislikes:
Chinese meals Fish and chips, fried foods	Most vegetables but particularly turnips, Brussel sprouts and cabbage. Don't mind salad, carrots or any vegetable that can be eaten cold.

Do you think that other boys and girls of your age have the same likes and dislikes? "They are all different".

Description of school cafeteria:

Cafeteria has 16 tables
7 tables for school dinners
each table can seat 16 pupils
7 tables for those who choose their food
2 tables for teachers in a kind of separate corner.
M. does not know what they get to eat but he knows "they get water" and specifies it spontaneously (remember that he had mentioned "no drink" in relation to his school dinner).

Appendix I (Cont'd)

Interview with one school girl (E)

Wednesday 25th February from 15:50 to 16:05 at the N.R.U.
Sex: F. Age: 12. Grade: Secondary I, private mixed school.

24 hour recall from yesterday morning until this morning.

Nature and source of food	With whom food was eaten	Where	Approximate time
Breakfast poached egg bowl of sugar frosted flakes with milk crisp bread cup of tea glass of orange juice	family	home	7:00
"a bite or two" of a friend's sandwich (exceptional, normally has biscuit that she brings with lunch)	4 friends	playground	morning break
Lunch (from home) 2 smoked ham sandwiches one apple one chocolate biscuit approx.1/3 pt of orange drink. The rest of the pint was shared with others	6 friends	school refectory	12:40-13:15
cookie biscuit chocolate biscuit	M. (male cousin)	on way home	16:10
Cup of tea	Mom and sister	home	17:00

Appendix I (Cont'd)

Interview with (E)

Nature and source of food	With whom food was eaten	Where	Approximate time
Tea curried mince potatoes + vegetable (cannot recall kind) cake cup of tea Ate all of it	family	home	17:15
cup of tea + 2 chocolate biscuits	alone	bedroom	19:00

Likes:

coke
jaffa cake biscuits
pears (fresh)
roast beef
prawn cocktail

Dislikes:

haggis and turnips
bread pudding
strong curries

APPENDIX II

Average nutrient intakes of poor London children, expressed as a percentage of the recommended daily intakes (DHSS, 1979).

Nutrient	Total Sample (n=60)	Children at or below 10th percentile for height (n=9)	Siblings of children at or below 10th percentile for height (n=22)	National Food Survey (MAFF, 1976) +
Energy	86	74	72*	82
Protein	116	98	92**	101
Calcium	129	112	104	153
Iron	98	81	80**	84
Vitamin A	157	121	116**	174
Thiamin	114	109	103	115
Riboflavin	126	104	98**	124
Nicotinic Acid	92	80	76*	88
Vitamin C	175	166	150	113
Vitamin D	60	26***	40***	58

* $p<0.05$ ** $p<0.01$ *** $p<0.001$ significantly different from total sample mean.

+ Income group D and E_2, households with two adults and three children.

(From Nelson M. and D.J. Naismith 1979, p.37)

APPENDIX III

INTERVIEW SCHEDULE

SEX:	YESTERDAY WAS	SUNDAY OR HOLIDAY ☐ WEEKDAY ☐	AGE:	SCHOOL ATTENDED:

NATURE OF FOODS CONSUMED FOR HOME-PREPARED FOODS: Investigate taste, texture, temperature, size of portion. OTHER FOODS: Try to get NAME. If impossible description of wrapper, shape	Dishes or utensils	Company	Where	Approx. time

NATURE OF FOODS COMSUMED HOME-PREPARED FOODS: Investigate taste, texture, temperature, size of portion. OTHER FOODS: Try to get NAME. If impossible description of wrapper, shape	Dishes or utensils	Company	Where	Approx. time

Do you get any pocket money?

Yes ☐ No ☐

How much? How often?

APPENDIX IV

GUIDE FOR THE USE OF INTERVIEW SCHEDULE

A. Introduction of interviewer and explanations to be given to respondents:

The interviewer should not interview a child whose parents have not given a written consent; the consent form must be returned to the investigator with the completed interview schedule. When the identity of the respondent is known, the interviewer writes on the interview schedule the following information:

1. Sex of the respondent
2. Whether previous day was a week day or holiday (including Sunday)
3. School attended

The age <u>should not</u> be asked before the interviewer has identified herself (himself) to the child.

Once the interviewer has made arrangements to interview a pupil, she (he) introduces herself (himself) and explains the purpose of the interview as follows:

The interviewer greets the child with a "good morning" or "good afternoon" as appropriate adding the respondent's first name.

Ex. "Good morning John".

Some children are very tensed at the beginning of the interview and care must be taken to make them feel at ease with the interviewer. (Smiling warm attitude, making sure the child is comfortable, etc...)

Following this first contact, the interviewer says:

"I am ------, the person coming to question you, and other children, about what you eat and how you eat. I want you to tell me what you have been eating or drinking yesterday from the moment you woke up until

you went to sleep. Please say everything you can remember. Even things like bubble gum or Fizz Bombs are important for me to know. I also want to know where and with whom you have been eating or drinking.

Before we start, could you tell me your age, please?"

The age of the respondent is noted.

The proper interview (24 hour recall) then begins.

B. Proper Interview.

The aim of the interview is two-fold: (a) to discover the eating patterns of the child (when the child eats, what he eats, with whom, where and whether he uses utensils and dishes); (b) to discover some characteristics of foods that make them appealing to children (taste, texture, temperature, shape of food, size of portion, type of wrapping, overall appearance of wrapper).

The interviewer will find it easier to help the child recalling all food events in a chronological order repeating or summarizing what the respondent just said and, from there, moving to the next food event.

Ex. (Int.) Do you remember at what time you woke up yesterday?

(Child) About 7 o'clock.

(Int.) Did you have anything to eat or to drink then?

(Child) Aie. I had a piece and tea.

(Int.) Can you tell me more about your piece? Did you have anything on it like margarine, cheese or jam?

(Child) Jam.

(Int.) Did you spread the jam yourself or did someone do it for you?

(Child) I did.

(Int.) Did you use a plate to put your piece onto?

(Child) No.

APPENDIX IV (Cont'd)

(Int.) How much tea did you drink?

(Child) Just a cup.

(Int.) Can you tell me who was with you when you had your piece and tea?

(Child) My wee brother and my mom.

(Int.) So, you had a piece with jam and tea with your mom and brother. What did you do afterwards?

(Child) Went to school.

(Int.) Did you have anything to drink or to eat on your way to school?

The interviewer should avoid using words like "breakfast", "lunch", "dinner" or "meal". The child should be questioned about all the characteristics mentioned above; the interviewer will find it useful to familiarize herself (himself) with the list of variables and categories provided by the investigator. Information such as "Sweetie off me pal" should always be investigated with regard to its name and, if the respondent does not recall the name, its other characteristics like texture, shape, size and type of wrapping.

At the end of this recall, the interviewer will then say:

"Now one last question (name of the child). Do you get any pocket money?"

Immediately after, the card game will be introduced. This game should not be disclosed to the respondent before or during the 24-hour recall.

APPENDIX V

GUIDE FOR THE USE OF THE CARDS

Immediately after the last question of the interview, the interviewer introduces the series of cards as follows:

"Now that you have answered all my questions (name of the child), I will show you a sort of game. This game consists of pretending that you buy the foods pictured on these photos."

As she (he) says that, the interviewer displays the cards before the child naming each of them. Only the name written at the bottom of the photograph should be used and the cards should be displayed following strictly the following order and pattern.

No. 1 "This is a can of Coca-Cola"

No. 2 "This is a packet of Smarties"

No. 3 "This is a packet of walnuts and dates"

No. 4 "This is pure orange juice"

No. 5 "This is a strawberry milk drink"

No. 6 "This is an orange drink"

No. 7 "This is a pineapple slice"

No. 8 "This is a packet of crisps"

No. 9 "This is an orange drink"

No. 10 "This is a packet of walnuts and dates"

No. 11 "This is a packet of Smarties"

No. 12 "This is pineapple chunks"

No. 13 "This is a strawberry milk drink"

No. 14 "This is pure orange juice"

No. 15 "This is a jar of Coca-Cola"

No. 16 "This is a packet of crisps"

APPENDIX V (Cont'd)

Pattern to be followed:

No. 1	No. 2	No. 3	No. 4
No. 5	No. 6	No. 7	No. 8
No. 9	No.10	No.11	No.12
No.13	No.14	No.15	No.16

Step 1. The interviewer continues slowly "Let's pretend that each of these foods costs 15p. I give you 5 tickets worth 15p each. That means that you can buy 5 of those foods. You can buy each thing more than once if you want. Which ones do you buy?"

The interviewer gives the child the pictures of the foods she (he) bought and takes the tickets in exchange. The number of the foods bought are noted at the back of the interview schedule, as follows:

Step 1.	No. a , b , c , d , e .
Step 2.	No. f , g , h .
Step 1.	No. i .

When all five tickets have been spent, the interviewer pursues:

Step 2. "Now, I will give you 3 tickets and ask you to buy 3 foods". Same procedure is followed: pictures in exchange for tickets.

Step 3. "Now, if I give you only one ticket which food would you buy with it?"

Once the child has chosen the last card, the interviewer says: "This is the end of the game (name of the child). Unfortunately, I must ask you to give this card back to me because I shall need it with the other children I am going to meet. I thank you very much for your help."

The interviewer follows the appropriate procedure to return the child to the classroom.

APPENDIX VI

LETTER ADDRESSED TO HEADTEACHERS
TO INFORM THEM OF THE RESEARCH

Edinburgh

Dear.....

Following our meeting of yesterday, I am pleased to write the information you requested regarding my research project on the food habits of primary school children.

The focus of my research is on the environmental and cultural factors influencing the food habits of children. I intend to concentrate on some physical characteristics of their favourite foods and on the availability of foods in the school environment (food stores in the school vicinities).

My research, which will be undertaken in two private schools and two ordinary schools, has been approved by the Lothian Regional Council Research Evaluation Committee and by one other private school. I have already interviewed a total of thirteen children attending two different schools. You will find included a copy of the letter of consent form used for the pre-testing of my interview schedule in one of these schools. It explains the purpose of my project and the implications for the pupils to be interviewed.

I intend to do my final data collection this coming Fall and I shall interview about 50 children from grade 1 to 7.

As I was mentioning yesterday, the time of these interviews will be chosen at our mutual covenience.

I believe that this letter together with the letter of consent form attached provide the essential information regarding my research project and I am available to complete it if needed.

I wish to thank you for your kind co-operation and I hope that my project will not cause too much disturbance in your school.

Respectfully yours,

Nicole Rousseau
Doctoral Student
Nursing Research Unit
12 Buccleuch Place
Edinburgh
Tel. 667 1011 ext. 6770

APPENDIX VII-A

UNIVERSITY OF EDINBURGH
Department of Nursing Studies
ADAM FERGUSON BUILDING, 40 GEORGE SQUARE, EDINBURGH EH8 9LL.
Head of Department: **Professor Annie T. Altschul** Telex 727442 (Unived G).
Tel. 031 667-1011 Ext.

Dear Parent

I am a doctoral student at the University of Edinburgh Department of Nursing Studies doing a research project on the consumption of foods by primary school children. One purpose of this project is to study the food habits of school children. I am mainly interested in the foods that children choose themselves when they have the choice, the foods they will buy with their pocket money for example. The ultimate aim of this project which is taking place in several schools is to help school nurses and other health professionals to develop effective preventive measures to improve the food habits of school children. Such measures should help prevent problems like tooth decay for example.

This letter is to request your permission to interview your child regarding his (her) food habits. The interview lasts from 15 to 20 minutes and is done during school hours in the school setting; it consists of asking the child what he(she) has been eating in the past 24 hours, where and with whom the food was consumed. The emphasis will be placed upon the consumption of foods that children eat between meals or choose themselves. Your child has been chosen at random with the co-operation of the school authorities and all the information will be kept confidential as the name of your child will not appear on the interview schedule. The school authorities gave their permission for these interviews to take place in the school.

Your co-operation, necessary to the realization of this project, will be greatly appreciated. Your child will not be interviewed without your permission. Therefore, I shall be grateful if you complete the form of consent at the bottom of this letter and give it back to your child who will return it to the school.

Anticipating your co-operation, I wish to thank you and I hope that your child will eventually benefit from this study.

Nicole Rousseau
Ph.D. Student
Nursing Research Unit,
12 Buccleuch Place
Edinburgh EH8 9JT
Tel. 667 1011 Ext. 6770

FORM OF CONSENT

I, the undersigned, accept that my child be interviewed for the research described above. I understand that the information thus obtained by the interviewer will remain strictly confidential.

Name of the child to be interviewed: .....

Signature of one parent: .....

Date: .....

UNIVERSITY OF EDINBURGH
Department of Nursing Studies
ADAM FERGUSON BUILDING, 40 GEORGE SQUARE, EDINBURGH EH8 9LL.
Head of Department: **Professor Annie T. Altschul** Telex 727442 (Unived G).
Tel. 031 667-1011 Ext.

Dear Parent

I am a research student at the University of Edinburgh Department of Nursing Studies doing a project on the eating habits of primary school children. The purpose of this project is to study some environmental effects upon the food habits of children as well as their patterns of eating. I am mainly interested in the foods that children choose themselves when they have the choice, the foods they will buy with their pocket money for example.

This letter is to request your permission to interview your child regarding his (her) food habits. The interview lasts from 15 to 20 minutes and is done during school hours in the school setting; it consists of asking the child what he (she) has been eating in the past 24 hours, where and with whom the food was consumed. The emphasis will be placed upon the consumption of foods that the children eat between meals or choose themselves. Your child has been chosen at random with the co-operation of the school authorities and all the information will be kept confidential as the name of your child will not appear on the interview schedule. Mr and Mr gave their permission for these interviews to take place in the school.

The ultimate aim of this project is to help school nurses and other professionals to develop effective preventive measures to improve the food habits of school children. Such measures should help prevent problems like tooth decay for example. Your co-operation is necessary to the realization of this project as no child will be interviewed without the written permission of his (her) parents. Therefore, would you please complete the form of consent at the bottom of this letter and give it back to your child who will return it to the school?

Anticipating your co-operation, I wish to thank you and I hope that your child will eventually benefit from this study.

Nicole Rousseau
Ph.D. student
Nursing Research Unit
12 Buccleuch Place
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The ultimate aim of this project is to help school nurses and other professionals to develop effective preventive measures to improve the food habits of school children. Such measures should help prevent problems like tooth decay for example. Your co-operation is necessary to the realization of this project as no child will be interviewed without the written permission of his(her) parents. Therefore, would you please complete the form of consent at the bottom of this letter and give it back to your child who will return it to the school?

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Nicole Rousseau
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12 Buccleuch Place
Edinburgh EH8 9JT
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FORM OF CONSENT

I, the undersigned, accept that my child be interviewed for the research described above. I understand that the information thus obtained by the interviewer will remain strictly confidential.

Name of the child to be interviewed: .....

Signature of one parent: .....

Date: .....

APPENDIX VIII

LETTER OF THANKS TO PARENTS OF ONE SCHOOL

Edinburgh

10 November 1981

Mr or Mrs.....

Dear Parent

You were sent a letter earlier this Autumn asking your permission to interview your child about his (or her) food habits. The interview was done as described and the study is now almost completed.

I wish to thank you and your child sincerely for your kind collaboration which has made this study possible. I expect to be able to communicate the findings to each participating school sometime next Spring.

Sincerely yours

Nicole Rousseau
Ph.D. Candidate
Department of Nursing Studies
University of Edinburgh
Edinburgh

APPENDIX IX

EXAMPLE OF A LETTER OF THANKS TO A HEADTEACHER

Edinburgh

26 November 1981

Mr .....
Headmaster

Dear Mr

As I was telling you this morning, I have now completed my data collection in your school. A total of 49 pupils have been interviewed: a very good response considering my target number of 50.

I wish to thank you and your staff for your excellent co-operation. Your secretary deserves special thanks for her kindness and I was very encouraged by the interest that many teachers have taken in the project. Mrs Milne and I have both really enjoyed working in your school.

I expect to have completed my data analysis sometime next Spring and I shall be very happy to communicate the findings to anyone interested then (teachers and parents if possible). I shall recontact you about that in due course.

Until then, I can only reiterate my thanks.

Sincerely yours

Nicole Rousseau
Ph.D. Candidate
Department of Nursing Studies
University of Edinburgh

APPENDIX X

LIST OF THE 61 CATEGORIES OF FOODS

Code	
	BREAKFAST:
00	Non-whole grain cereals with milk and sugar
01	Whole grain cereals with milk and sugar
02	Non-whole grain cereals with milk only
	DRINKS:
03	Soft drinks including tea or coffee with sugar only
04	Tea or coffee with milk and sugar
05	Tea or coffee with milk only
06	Flavoured milk drinks
07	Unflavoured milk
08	Pure fruit juice
	BREAD:
09	Plain white slice or toast, waffle or pancake
10	White slice or toast, waffle or pancake with butter/marg.
11	White slice or toast, pancake or waffle with sweet topping
12	White slice, toast or pizza with savoury topping (meat, fish, peanut butter, cheese or egg)
13	Plain white roll
14	White roll with butter/margerine only
15	White roll or sandwich with sweet filling
16	White roll or sandwich with fruit or vegetable filling
17	White roll or sandwich with savoury filling
18	Plain brown slice or toast
19	Brown slice or toast with butter or margarine
20	Brown slice or toast with sweet topping
21	Brown slice or toast with savoury topping
22	Brown roll or sandwich with fruit or vegetable filling
23	Brown roll or sandwich with savoury filling
	SOUPS:
24	Consomme
25	Cream soups
26	Vegetable soups
27	Meat or alternatives of meat soups
28	SAVOURY PIES (including Scotch egg, sausage rolls, quiches)
29	STEWS (including shepherds' pie, fish pie)

APPENDIX X (Cont'd)

MEAT AND FISH

39 Fish
31 Tinned meat, sausages, hamburgers, white or black pudding
32 Various meat cuts
33 Mince
34 Haggis

35 HARD BOILED EGG OR EGG DISH

RICE AND PASTA DISHES

36 Rice or pasta without cheese or meat
37 Rice or pasta with meat
38 Pasta with cheese

39 BEANS

40 CHEESE OR PLAIN YOGHURT

VEGETABLES (including tomatoes)

41 Raw vegetables
42 Cooked vegetables excluding chips
43 Chips

FRUIT

44 Fresh fruits
45 Tinned fruits
46 Sundries

47 CRACKERS

48 CRISPS

49 BISCUITS (chocolate and other sweet biscuits)

DESSERTS

50 Flavoured yoghurt
51 Milk based dessert (custard type, rice pudding, ice cream)
52 Jelly based dessert (with or without topping)
53 Cake with custard (including trifle)
54 Cake, doughnuts, pies, sweet scones
55 Various home-made sweets

56 SWEETS AND CHEWS

57 LOLLIPOPS

58 CHEWING GUMS

59 BUBBLE GUMS

60 PEANUTS

61 ODDS (included 5 items)

APPENDIX XI

CODE BOOK

24h-recall interviews

Columns	Code	Categories	Value Label	Variable
1, 2, 3	000 to 191	Identification number	Seq.	Respondent's identification
4	1	Female	Fem.	Sex
	2	Male	Male	
	9	Missing information	Miss.	
5	1	Sunday or holiday	Hol	Day of consumption
	2	Weekday	Week	
6, 7	04 to 12	Number of years	Age	Age
	99	Missing information	Miss.	
8	1	Private Low Density	Byron	School attended
	2	Private High Density	Scott	
	3	Depressed High Density	Burns	
	4	Depressed Low Density	Bruce	
9, 10	01	Once	1	Frequency of food consumption (number of times food consumed in 24 hours)
	02	Twice	2	
	⋮	⋮		
	11	11 times etc....	11	
	99	Missing information	Miss.	

APPENDIX XI, contd.

Columns	Code	Categories	Value Label	Variable
11	1	0	0	Weekly money allowance
	2	1 - 39p	1-39	
	3	40 - 69p	40-69	
	4	70 - 99p	70-99	
	5	£1.00 - £1.29	100-129	
	6	£1.30 - £1.59	130-159	
	7	More than £1.59	>159	
	9	Missing information	Miss.	
12,13,14, 15	0000to?	Identification number	Seq.	Identification of food item
16	1	1	1	Number of items
	2	2	2	
	3	3	3	
	4	4	4	
	5	5	5	
	6	6	6	
	7	7	7	
	8	More than 7	7	
	9	Missing information (including sharing)	Miss.	
17,18	00 to 61	See classification of food items		Nature of food item
	00		NWGCMS	
	01		WGMS	
	02		NWGM	
	03		SDTCS	

APPENDIX XI, contd.

Columns	Code	Categories	Value Label	Variable
	04		Tea Cof. MS	Nature of food item
	05		Tea Cof. M	
	06		F Milk	
	07		UF Milk	
	08		P Fruit J.	
	09		P.W. Slice	
	10		W. Slice BM	
	11		W. Sl. Sweet	
	12		W. Sl. Savour.	
	13		P.W. Roll	
	14		W. Roll BM	
	15		W. Rl.Sd.Sw.	
	16		W.R. Sd. FV.	
	17		W.R. Sd. Sav.	
	18		PB Slice	
	19		B Slice BM	
	20		B Sl. Sweet	
	21		B Sl. Sav.	
	22		B. Rl. Sd FV	
	23		B. Rl. Sd Sav.	
	24		Cons.	
	25		Cream Sp	
	26		Veg. Sp	
	27		Meat Sp	
	28		Sav Pies	
	29		Stews	
	30		Fish	

APPENDIX XI, contd.

Columns	Code	Categories	Value Label	Variable
17,18	31		Cheap M.	Nature of food item
	32		Meat cuts	
	33		Mince	
	34		Haggis	
	35		Egg	
	36		Ri Pa	
	37		Ri Pa Meat	
	38		Pa Chee.	
	39		Beans	
	40		Yo Chee.	
	41		Raw Veg.	
	42		Cook. Veg.	
	43		Chips	
	44		Fresh Fr.	
	45		Tin. Fruit	
	46		Sundries	
	47		Crack.	
	48		Crisps	
	49		Biscuits	
	50		Yo Flav.	
	51		Milk Des.	
	52		Jelly	
	53		Cake Cus.	
	54		Cake Do Pi.	
	55		Ho Made Sw.	
	56		Sw Chew	
	57		Lolly	
	58		Chew Gum.	

APPENDIX XI,

Columns	Code	Categories	Value Label	Variable
17,18	59		Bub Gum.	Nature of food item
	60		Pean.	
	61		Odds	
	99	Missing information	Miss.	
19	1	Sweet (other than 3, 4, 5)	Sweet	Taste
	2	Savoury (cheesy, spicy, salted)	Savoury	(boiled veg + tatties are
	3	Mint	Mint	coded '7')
	4	Fruity	Fruity	Beans are '7'
	5	Chocolate	Choco	
	6	Salt and vinegar	Sal.Vin.	
	7	Other (bitter,sour,nutty etc)	Other	
	9	Missing information	Miss.	
20	1	Liquid (exclud. effervescent)	Liquid	Texture
	2	Semi-liquid	Sem.Liq.	Non toasted bread and dough-
	3	Soft	Soft	nuts are coded chewy
	4	Chewy	Chewy	
	5	Hard	Hard	Soups are semi-liquid
	6	Effervescent (incl.fizzy drinks)	Fizz	
	7	Crispy (incl.crunchy, crumbly)	Crisp	Meat is chewy unless minced.
	9	Missing information	Miss.	
21	1	Hot or warm	Hot	Temperature
	2	Room temperature	Rm temp.	
	3	Cold	Cold	
	4	Frozen (incl. slush)	Frozen	
	9	Missing information	Miss.	

Columns	Code	Categories	Value Label	Variable
22	1	Shapeless	No shap.	Shape of food
	2	Cubiform, square or rectangular flat	Cub Sq. Rec.	(or of container if liquid)
	3	Long cylinder or rectangle	Lg Cyl Rec.	Soups are coded semi-liquid
	4	Spherical or round flat	Sph Rd fl.	
	5	Animal, Human, Monster	An.Hum.Mo.	
	6	Carton (small)	Carton	
	7	Bottle or can (small)	Bot.Can.	
	8	Other (bowl, glass, cup, etc.)	Other	
	9	Missing information	Miss.	
23	1	Packet (dry items) 12 oun. or less for liquid items	Pack Can	Size
	2	Can enter the mouth in one full piece	Small	
	3	Cannot enter the mouth in one full piece (includ. one helping)	Big	
	9	Missing information	Miss.	
24	1	Natural	Natur.	Visual appearance of item
	2	*Unwrapped adult target	U.wrap Ad	
	3	Unwrapped child target	U.wrap Ch	(Cooked foods are coded unwrapped adult)
	4	Wrapped adult target	Wrap Ad	
	5	Wrapped child target	Wrap Ch	
	9	Missing information	Miss.	Drinks in flasks are '3', in glass, cups are '2'

*Dished out or cupped out from big pack

APPENDIX XI, contd.

Columns	Code	Categories	Value Label	Variable
25	1	No use of dishes or utensils	No Use	Use of dishes or utensils
	2	Use of dish or container (includ. flask, paper cups and plates but exclud. container in which item is sold)	Dish Con.	
	3	Use of utensil(s) only	Utens.	
	4	Use of dish & utensil(s)	Dish Ut.	
	9	Missing information	Miss.	
26	1	No company	Alone	Company
	2	With peer(s)	Peer	
	3	With adult(s)	Adult	
	4	With peer(s) & adult(s)	Both	
	9	Missing information	Miss.	
27	1	Home	Home	Setting
	2	Streets, bus, school ground	St.Bus.Str.	
	3	School buildings	Sch.Build.	
	4	Home other than ego's	Other Home	
	5	Other setting	Other Set.	
	9	Missing information	Miss.	
28	1	Before or at breakfast time	Breakf.	Time of consumption
	2	Morning (from breakfast to lunch)	Morning	
	3	Lunchtime	Lunch	
	4	Between lunch and dinner	Lu din.	
	5	Dinnertime	Dinner	
	6	Between dinner and bedtime	Din Bed	
	7	Bedtime	Bed	
	9	Missing information	Miss.	

APPENDIX XII

CODE BOOK

Game of Pretend

Columns	Code	Categories	Var. Label	Variable
1,2,3	000 to 191	Identification number	Seq.	Respondent's identification
4	1	Female	Fem.	Sex
	2	Male	Male	
	9	Missing information	Miss.	
5,6	04 to 12	Number of years	Age	Age
	99	Missing information	Miss.	
7	1	George Watson's	Byron	School attended
	2	George Heriot's	Scott	
	3	Inchview	Burns	
	4	St. David's	Bruce	
8	1	0	0	Amount of pocket money
	2	1 - 39p	1-39	
	3	40 - 69p	40-69	
	4	70 - 99p	70-99	
	5	£1.00 - £1.29	100-129	
	6	£1.30 - £1.59	130-159	
	7	More than £1.59	>159	
	9	Missing information	Miss.	
9	0 to 5	0	Can Coke	Score for Can of Coke in step 1
		1,2,3,4 or 5	I	

APPENDIX XII, contd.

Columns	Code	Categories	Var. Label	Variable
10	0 to 6	0 2,4 or 6	Can Coke 2	Score for Can of Coke in step 2
11	0 to 3	0 or 3	Can Coke 3	Score for Can of Coke in step 3
12	0 to 5	0 1,2,3,4 or 5	Dullsmar. 1	Score for Dull Smarties in step 1
13	0 to 6	0 2,4 or 6	Dullsmar. 2	Score for Dull Smarties in step 2
14	0 to 3	0 or 3	Dullsmar. 3	Score for Dull Smarties in step 3
15	0 to 5	0 1,2,3,4 or 5	Dullnuts 1	Score for Dull Nuts in step 1
16	0 to 6	0 2, 4 or 6	Dullnuts 2	Score for Dull Nuts in step 2
17	0 to 3	0 or 3	Dullnuts 3	Score for Dull Nuts in step 3
18	0 to 5	0 1,2,3,4 or 5	FunJu 1	Score for Fun Juice in step 1
19	0 to 6	0 2, 4, or 6	FunJu 2	Score for Fun Juice in step 2
20	0 or 3	0 or 3	FunJu 3	Score for Fun Juice in step 3

APPENDIX XII, contd.

Columns	Code	Categories	Var. Label	Variable
21	0 to 5	0 1, 2, 3, 4 or 5	Dullmilk 1	Score for Dull Milk in step 1
22	0 to 6	0 2, 4 or 6	Dullmilk 2	Score for Dull Milk in step 2
23	0 or 3	0 or 3	Dullmilk 3	Score for Dull Milk in step 3
24	0 to 5	0 1, 2, 3, 4 or 5	FunDrink 1	Score for Fun Drink in step 1
25	0 to 6	0 2, 4 or 6	FunDrink 2	Score for Fun Drink in step 2
26	0 or 3	0 or 3	FunDrink 3	Score for Fun Drink in step 3
27	0 to 5	0 1, 2, 3, 4 or 5	Fun Pin 1	Score for Pineapple lolly in step 1
28	0 to 6	0 2, 4 or 6	Fun Pin 2	Score for Pineapple lolly in step 2
29	0 to 3	0 or 3	Fun Pin 3	Score for Pineapple lolly in step 3
30	0 to 5	0 1, 2, 3, 4 or 5	Dullcrisps 1	Score for Dull Crisps in step 1
31	0 to 6	0 2, 4 or 6	Dullcrisps 2	Score for Dull Crisps in step 2

APPENDIX XII, contd.

Columns	Code	Categories	Var. Label	Variable
32	0 to 3	0 or 3	Dullcrisps 3	Score for Dull Crisps in step 3
33	0 to 5	0 1, 2, 3, 4 or 5	Dulldrink 1	Score for Dull Drink in step 1
34	0 to 6	0 2, 4, or 6	Dulldrink 2	Score for Dull Drink in step 2
35	0 or 3	0 or 3	Dulldrink 3	Score for Dull Drink in step 3
36	0 to 5	0 1, 2, 3, 4 or 5	Fun nuts 1	Score for Datnuts in step 1
37	0 to 6	0 2, 4 or 6	Fun nuts 2	Score for Datnuts in step 2
38	0 or 3	0 or 3	Fun nuts 3	Score for Datnuts in step 3
39	0 to 5	0 or 1, 2, 3, 4 or 5	Fun Smar 1	Score for Fun Smarties in step 1
40	0 to 6	0 or 2, 4 or 6	Fun Smar 2	Score for Fun Smarties in step 2
41	0 or 3	0 or 3	Fun Smar 3	Score for Fun Smarties in step 3
42	0 to 5	0 or 1, 2, 3, 4 or 5	Dull Pin 1	Score for Dull Pineapple in step 1
43	0 to 6	0 or 2, 4, 6	Dull Pin 2	Score for Dull Pineapple in step 2
44	0 or 3	0 or 3	Dull Pin 3	Score for Dull Pineapple in step 3

APPENDIX XII, contd.

Columns	Code	Categories	Var. Label	Variable
45	0 to 5	0 or 1, 2, 3, 4 or 5	Fun Milk 1	Score for Fun Milk in step 1
46	0 to 6	0 or 2, 4 or 6	Fun Milk 2	Score for Fun Milk in step 2
47	0 or 3	0 or 3	Fun Milk 3	Score for Fun Milk in step 3
48	0 to 5	0 or 1, 2, 3, 4 or 5	Dull Juice 1	Score for Dull Juice in step 1
49	0 to 6	0 or 2, 4 or 6	Dull Juice 2	Score for Dull Juice in step 2
50	0 or 3	0 or 3	Dull Juice 3	Score for Dull Juice in step 3
51	0 to 5	0 or 1, 2, 3, 4 or 5	Dull Coke 1	Score for Jar of Coke in step 1
52	0 to 6	0 or 2, 4, 6	Dull Coke 2	Score for Jar of Coke in step 2
53	0 or 3	0 or 3	Dull Coke 3	Score for Jar of Coke in step 3
54	0 to 5	0 or 1, 2, 3, 4 or 5	Fun Crisps 1	Score for Monster Munch in step 1
55	0 to 6	0 or 2, 4, 6	Fun Crisps 2	Score for Monster Munch in step 2
56	0 or 3	0 or 3	Fun Crisps 3	Score for Monster Munch in step 3

APPENDIX XIII

INDEX USED IN THE CODING OF FOOD ITEMS

Nature (code)	Taste	Texture	Temperature	Shape	Size
Apple (44)	fruity	crispy	room temp	spherical	> mouthful
Bandit choc. biscuit (49)	chocolate	crispy	room temp	long rectangle	> mouthful
Bounty Bar (56)	chocolate	soft	room temp	long rectangle	> mouthful
Brussel Sprouts (42)	other	soft	warm	spherical	mouthful
Caramac (56)	sweet	hard	room temp	long rectangle	> mouthful
Chips (43)	savoury	soft	warm	long rectangle	mouthful
Cola Cubes (56)	sweet	hard	room temp	cubiform	mouthful
Crunchie Bar (56)	chocolate	crispy	room temp	long rectangle	> mouthful
Curly Wurly (56)	chocolate	chewy	room temp	long rectangle	> mouthful
Drifter (49)	chocolate	chewy	room temp	long rectangle	> mouthful
Fish Fingers (30)	other	crispy	warm	long rectangle	> mouthful
Five Alive (03)	fruity	liquid	room temp	carton	12 ounce or
5-4-3-2-1 (49)	chocolate	crispy	room temp	long rectangle	> mouthful
Fizz Bomb (56)	sweet	effervescent	room temp	spherical	mouthful
Fruit Pastilles (56)	fruity	chewy	room temp	round	packet
Hard Boiled Egg (35)	other	soft	warm	other	> mouthful
Hot Dog (17)	savoury	chewy	warm	long cylinder	> mouthful
Jelly Babies (56)	fruity	chewy	room temp	human	packet
Kit-Kat (2 fingers) (49)	chocolate	crispy	room temp	long rectangle	> mouthful

APPENDIX XIII, contd.

Nature (code)	Taste	Texture	Temperature	Shape	Size
Maltesers (56)	chocolate	crispy	room temp	spherical	packet
Marathon (56)	chocolate	soft	room temp	long rectangle	>mouthful
Mars Bar (56)	chocolate	chewy	room temp	long rectangle	>mouthful
Melon (piece of) (44)	fruity	soft	room temp	other	>mouthful
Milky Way (56)	chocolate	soft	room temp	long rectangle	>mouthful
Minstrels (56)	chocolate	hard	room temp	spherical	packet
Orange Squosh (03)	sweet	liquid	cold	other	12 ounce or<
Peanuts (60)	other	crispy	room temp	other	mouthful
Peas (42)	other	soft	warm	shapeless	>mouthful
Penguin choc. biscuit (49)	chocolate	crispy	room temp	long rectangle	>mouthful
Polo Mints (56)	mint	hard	room temp	round	packet
Prawn Cocktail crisps (48)	savoury	crispy	room temp	square flat	mouthful
Quavers crisps (48)	savoury	crispy	room temp	other	packet
Ready Brek with milk and sugar (01)	sweet	semi-liquid	warm	other	> mouthful
Relays (56)	chocolate	chewy	room temp	spherical	packet
Rice Crispies with milk and sugar (00)	sweet	semi-liquid	cold	other	>mouthful
Rich Tea biscuit (49)	sweet	crispy	room temp	round flat	>mouthful
Rolos (56)	chocolate	hard	room temp	round	packet
Salad (41)	other	chewy	cold	shapeless	>mouthful
School Milk (07)	other	liquid	room temp	carton	12 ounce or<

APPENDIX XIII, contd.

Nature (code)	Taste	Texture	Temperature	Shape	Size
Shepherds Pie (29)	savoury	soft	warm	shapeless	> mouthful
Skips Crisps (48)	savoury	crispy	room temp	other	packet
Smarties (56)	chocolate	hard	room temp	round	packet
Snowball (56)	sweet	soft	room temp	spherical	> mouthful
Star Bar (56)	chocolate	crispy	room temp	long cylinder	> mouthful
Tea or Coffee with milk and sugar (04)	sweet	liquid	warm	other	12 ounce or <
Toast with margarine/butter (10)	other	crispy	room temp	square flat	> mouthful
Toast with sweet fruity topping (11)	fruity	crispy	room temp	square flat	> mouthful
Toffo (56)	sweet	chewy	room temp	round	packet
Tomato Soup (26)	other	liquid	warm	other	12 ounce or <
Topic Choc. Bar (56)	chocolate	soft	room temp	long rectangle	> mouthful
Treets (56)	chocolate	crispy	room temp	spherical	packet
Trio Choc. Biscuit (49)	chocolate	crispy	room temp	rectangle flat	> mouthful
Tunnock (49)	chocolate	chewy	room temp	spherical	> mouthful
Turkish Delight (56)	sweet	soft	room temp	rectangle flat	> mouthful
Twix choc. biscuit (49)	chocolate	crispy	room temp	long rectangle	> mouthful
Yoghurt Fruit Flav. (50)	fruity	semi-liquid	cold	other	> mouthful
Yo Yo Choc. Biscuit (49)	chocolate	crispy	room temp	round flat	> mouthful
Wagon Wheels Biscuit (49)	chocolate	chewy	room temp	round flat	> mouthful
Wholefood Crunchie Bar (49)	other	crispy	room temp	long rectangle	> mouthful
Wotsits (48)	savoury	crispy	room temp	long cylinder	packet

APPENDIX XIV

AGE DISTRIBUTION OF PRIMARY SCHOOL CHILDREN IN SCOTLAND

Thousands

Session	Age[1]									
	4	5	6	7	8	9	10	11	12 or over	Total
1973/74	6.9	84.2	89.6	88.8	90.9	93.4	90.5	88.0	10.6	643.1
1978/79	9.8	70.5	74.9	81.8	82.3	83.7	87.4	81.8	3.4	575.7
1979/80	10.2	66.4	70.5	74.7	81.5	82.0	83.3	79.8	3.2	551.7

[1] Age at 31 December of session

Pupils in primary school by age (from Scottish Education Department Statistical Bulletin, No $4/A_1/1982$)

Session	Age[1]								
	4	5	6	7	8	9	10	11	12 or over
1973/74	1.07	13.09	13.93	13.80	14.13	14.52	14.07	13.68	1.64
1978/79	1.70	12.24	13.01	14.20	14.29	14.53	15.18	14.20	.59
1979/80	1.84	12.03	12.77	13.53	14.77	14.86	15.09	14.46	.58

[1] Age at 31 December of session

Age distribution of pupils in % of the total population (calculated from the figures reported in the first table)

APPENDIX XV

FREQUENCY OF EATING
Exploration of the differences between schools

A. Mean and variance of the Frequency of eating by school.

School	School Mean	School Type Mean	School Variance
Priv. L.D./L.P.	5.3720	5.3404	2.24
Priv. H.D./H.P.	5.2115		1.39
Dep. L.D./H.P.	6.6521	6.0909	4.90
Dep. H.D./L.P.	5.4761		2.25

B. Analysis of the variance of Frequency of eating between schools.

Source of Variance	Sum of Squares	d.f.	Mean Squares	F-Ratio
Between schools	60.7	3	30.35	11.3670
Within schools	477.63	179[1]	2.67	
Total	538.33	182[1]	2.96	$p < .001$

[1] The 9 missing values were excluded.

APPENDIX XVI-A

CROSSTABULATION OF USE BY COMPANY
(Ungrouped categories)

Number of food items consumed using or not using dishes and/or utensils by category of company.

Use / Company	No Use	Dish or Container	Utensil	Dish and Utensil	Total
Alone	40	10	5	28	83
With peers	321	49	2	70	442
With adults	101	124	5	249	479
With peers and adults	262	329	21	802	1414
Total	724	512	33	1149	2418[1]

[1] Excluding 19 items for which the Use was not specified.

APPENDIX XVI-B

CROSSTABULATION OF SETTING BY COMPANY
(Ungrouped categories)

Number of food items consumed in different categories of setting by category of company.

Setting / Company	Home	Street Bus School Gr.	School Buildings	Other Home	Other Setting	Total
Alone	60	18	1	1	3	83
With peers	107	253	66	4	13	443
With adults	417	6	1	47	9	480
With adults and peers	966	2	410	41	3	1422
Total	1550	279	478	93	28	2428[1]

[1] Excluding 9 items for which the setting was not specified.

APPENDIX XVI-C

CROSSTABULATION OF TIMES BY COMPANY
(Ungrouped categories)

Number of food items consumed at different times of the day by category of company.

Time / Company	Breakfast Time	Morning	Lunch Time	Between Lunch and Dinner	Dinner Time	Between Dinner and Bedtime	Bedtime	Total
Alone	14	9	2	34	7	15	2	83
With peers	40	182	101	55	35	29	1	443
With adults	102	5	48	80	145	40	60	480
With adults and peers	234	54	433	73	500	81	47	1422
Total	390	250	584	242	687	165	110	2428[1]

[1] Excluding 9 items for which the time of consumption was not specified.

APPENDIX XVII-A

Number of food items in each category of taste depending on whether the item had been eaten in the absence or presence of adults. (Expected values in parentheses)

Company \ Taste	Sweet	Savoury	Mint	Fruity	Chocolate	Salt and Vinegar	Other	Total
Alone or with peers	142 (128.35)	108 (119.06)	9 (3.02)	110 (87.94)	60 (36.08)	33 (8.85)	59 (137.65)	521
With Adults	452 (465.64)	443 (431.93)	5 (10.97)	297 (311.05)	107 (130.91)	8 (32.14)	578 (499.34)	1890
Total	594	551	14	407	167	41	637	2411

APPENDIX XVII-B

Number of food items in each category of texture depending on whether the item had been eaten in the absence or presence of adults. (Expected values in parentheses)

Texture / Company	Liquid	Semi-Liquid	Soft	Chewy	Hard	Effer-vescent	Crispy	Total
Alone or with peers	87 (119.20)	32 (40.16)	64 (147.70)	82 (79.90)	39 (11.87)	21 (13.60)	195 (107.54)	520
With adults	465 (432.25)	154 (145.65)	620 (536.29)	288 (290.09)	16 (43.12)	42 (49.39)	303 (390.45)	1888
Total	552	186	684	370	55	63	498	2408

APPENDIX XVII-C

Number of food items in each category of temperature depending on whether the item had been eaten in the absence or presence of adults. (Expected values in parentheses)

Company \ Temperature	Hot Warm	Room Temp.	Cold	Frozen	Total
Alone or with peers	74 (205.43)	366 (214.56)	76 (97.19)	9 (4.78)	525
With adults	871 (739.56)	621 (772.43)	385 (360.78)	13 (17.21)	1890
Total	945	987	461	22	2415

APPENDIX XVII-D

Number of food items in each category of shape depending on whether the item had been eaten in the absence or presence of adults. (Expected values in parentheses)

Shape / Company	No Shape	Cubic/ Square/ Rect.	Long/ Cylinder/ Rect.	Speric. Round Flat	Animal Human Monster	Carton	Bottle Can	Other	Total
Alone or with peers	66 (97.78)	58 (55.09)	74 (53.66)	87 (57.12)	10 (2.43)	19 (18.09)	19 (4.67)	124 (168.12)	457
With adults	415 (383.21)	213 (215.90)	190 (210.33)	194 (223.87)	2 (9.56)	70 (70.90)	4 (18.32)	703 (658.87)	1791
Total	481	271	264	281	12	89	23	827	2248

APPENDIX XVII-E

Number of food items in each category of size depending on whether the item had been eaten in the absence or presence of adults. (Expected values in parentheses)

Company \ Size	Packet Size	Mouthful or smaller	Bigger than Mouthful	Total
Alone or with peers	216 (163.05)	68 (46.49)	235 (309.45)	519
With adults	538 (590.94)	147 (168.50)	1196 (1121.54)	1881
Total	754	215	1431	2400

APPENDIX XVII-F

Number of food items in each category of visual aspect depending on whether the item had been eaten in the absence or presence of adults. (Expected values in parentheses)

Visual aspect / Company	Natural	Unwrapped appealing to adults	Unwrapped appealing to children	Wrapped appealing to adults	Wrapped appealing to children	Total
Alone or with peers	40 (21.28)	173 (339.42)	68 (34.02)	115 (36.01)	64 (29.24)	460
With adults	67 (85.71)	1533 (1366.57)	103 (136.97)	66 (144.98)	83 (117.75)	1852
Total	107	1706	171	181	147	2312

APPENDIX XVIII

LIST OF ALL ILLUSTRATIONS OF FOODS USED FOR THE ETHNOGRAPHIC INTERVIEWS

1 A bowl of cereals with raisins and banana

2 A meat sandwich garnished with lettuce and tomato

3 A variety of milk and milk products

4 A variety of breads unwrapped

5 Grapefruit and orange salad in a nice cup

6 Fruit salad in a large bowl

7 Vegetable salad in a plate

8 Two open sandwiches in a plate

9 A carton of Five Alive juice

10 One onion with skin

11 One apple

12 One cabbage

13 One cauliflower

14 A bunch of carrots

15 Strawberries in a field

16 A bunch of leeks

17 One lettuce

18 Brussel sprouts on the stem and in a basket

19 Plums in a basket

20 Blue grapes in grape-vine

21 One orange hanging from a branch

22 Raspberries in a field

23 Lemons hanging in a tree

24 Radishes natural and nicely arranged in plate

25 Four apples hanging in a tree

26 Gooseberries in a basket

27 Tomatoes in a basket and cut on a board

28 Mince topped with mashed potatoes and garnished with peas dish

29 Five fried chicken drumsticks

30 Meat stew (curry type) on rice dish

31 A sausage roll

32 Haggis

33 Six salmon steaks and brocoli dish

34 Chili con carne in a large bowl

35 Grilled port sausages in serving dish

36 Grated cheese on rice and vegetables dish

37 Fish fillets with garnish dish

38 Fish fingers

39 Roasted ham with cloves dish

40 Baked potato, sliced carrot, green beans, chicken topped with mushrooms in a plate

41 A bowl of vegetable soup

42 A variety of uncooked meats

43 Roast with vegetables garnish dish

44 Meat stew topped with mashed potatoes dish

45 Meat with vegetable stew topped with pastry dish

46 Roasted turkey in foil

47 Lasagna dish

48 A bowl of Scotch broth

49 Cream of tomato soup

50 Flora margarine with a piece of spread bread

51 A pack of Krona margarine

52 A jar of Nescafe with whole grains and a cup of coffee

53 A packet of Earl Grey tea and a cup of tea

54 A cup of fresh strawberries topped with cream

55 Jars of home-made marmalade

56 A variety of Wall's Ice Cream products

57 A birthday chocolate cake with candles

58 Six apple cup cakes

59 Chocolate cake

61 Four apple pastries unwrapped

62 Trifle-type dessert in a cup

63 Two cups of strawberry custard garnished

64 Home-made fancy Christmas biscuits

65 Raisins and nuts in a small transparent bag

66 Sundried apples (poor picture)

67 Sundried apricot

68 Sundried pears

69 Original Crunchy Bar with honey and almonds

70 Wholefood mini-meal (Oat, Apricot and Almond)

71 Raisins and Muesli Bar

72 Two Wall's Mini Milk cups

73 Chocolate Angel Delight (Bird's label)

74 Ice cream log in a dish

75 Club fruit chocolate biscuit

76 Mars Bar chocolate Bar

77 Rolo (chocolate with toffee centre)

78 Splicer (a big chew)

79 Tooty Frooties (multicoloured small chews in a packet)

80 Trio chocolate biscuit

81 Mint Polo

82 Mint Pacers

83 Wall's Winner (Ice lollipop)

84 Wall's Funny Feet (Ice lollipop)

85 Two Wall's Rum and Raisins Cornettos

86 Wall's Magic Monster (Ice lollipop)

87 Tip Top Cola drink in transparent plastic cup

88 Snoopy Cola drink in a can

89 Green drink in a transparent monster-shaped container

90 Cresta strawberry drink in a small bottle

91 Unwrapped lollipop with sherbet inside

92 One cylinder-shaped marshmallow

93 One black and one red bubble gum unwrapped

94 One Mojo red chew

95 A roll of Parma Violet (round flat sweets)

96 One Dainty Toffee mint chew

97 One roll of Mini Mintos (round flat sweets)

98 One chocolate-textured round flat sweet with multicoloured seeds on it

99 Refreshers chew

100 Wrigley's Arrowmint chewing gum

101 One red oval-shaped sweet

102 One yellow worm-shaped jelly sweet

103 One chocolate-textured yellow monkey-shaped sweet (approx. one inch long)

104 One chocolate textured pink bear-shaped sweet (approx. one inch and a half long)

105 A little bag of Sherbet powder with a licorice stick sticking out.

106 A pink sugary pig (approx. $2\frac{1}{2}$ inches long)

107 One envelope of Space Dust

108 Olympic Black currant-flavoured chew

109 One Drumstick lollipop (wrapped)

110 A packet of Batman sweet cigarettes

111 Monster Munch saucy flavour

112 Chambourcy Natural Yoghurt container

113 One pint of milk in a plastic bottle

114 Chips in their chip shop wrapper with sauce

115 Five eggs in a carton (open)

116 A packet of McVitie's chocolate biscuits

117 Raspberry Instant Whip (Bird's label)

118 Potato Puffs (barbecue flavour) crisps

119 Milky Way

120 Griddles, beef flavoured crisps

121 Old Fashioned Smiths salt and vinegar crisps

122 Golden Wonder beef and onion flavoured crisps

123 Golden Wonder salt and vinegar crisps

124 Love Hearts, Multicoloured heart-shaped sweets with love phrases written on each

125 Mojo chew in blue wrapper

126 Just Juice orange juice. One litre carton

127 Pork pie and chips in wrapper from chip shop

128 K.P. Outer Spacers pickled onion crisps

129 Big D dry roast peanuts in packet

130 Smith Horror bag crisps

131 Wotsits cheesy corn puffs

132 Jungle Fresh salted peanuts in small packet

133 Chewits, blackcurrant flavour

134 Star Bar chocolate bar

135 Maltesers, chocolate coated sweets in packet

136 Sundried prunes (poor picture)

137 Sundried figs (poor picture)

138 Chips from chip shop in paper wrapper

139 Pork pie from chip shop in paper wrapper

140 Monster Munch pickled onion crisps

141 Golden Wonder cheese and onion crisps

142 Can of lemon and lime drink

143 Orange flavoured drink in a transparent horse-shaped plastic container

144 Trebor strawberry flavoured chews

145 Fruit Polo

146 Small pork pie in a plate with a fork

147 One packet of Ginger Snaps biscuits

148 Five drinks in small containers: Just Juice, apple juice, Can of Coca-Cola, Cresta strawberry flavoured, strawberry drink in monster-shaped container, strawberry milk drink in a carton.

149 Crazy Milk drink chocolate flavour

150 Rice Crispies in a bowl

151 Dairy Lea cheese spread triangles

152 Cheese macaroni with garnish in dish

153 Hot dog with mayonnaise and relish

154 Baked beans in dish

155 Ritz cheese crackers

156 Coconut cookies

157 McVitie's Cheddar biscuits

158 Yellow spectacles-shaped sweet (approx. 2 inches big)

159 Red comforter-shaped jelly sweet

160 One Tunnock's Snowball in original wrapper

161 One can of IRN-BRU

162 Smiths bacon flavour Farmer Brown crisps

163 Smiths salt and vinegar flavour Farmer Brown crisps

Plus the sixteen pictures of the Game of pretend

Total: 178 *

* There was no number 60 in the list.

APPENDIX XIX

COMPONENTIAL DEFINITION OF THE SUB-DOMAINS CHEWS AND LOLLIES

(Lower level dimensions of contrast)

	Dimensions of Contrast							
CHEWS	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0
Mint Pacers	8.2	N.A	10.4	11.1	12.2	13.1	14.2	?
Strawberry chews	8.4	N.A	10.4	11.1	12.2	V	14.1	15.1
Jelly Tots	8.4	N.A	10.4	11.1	12.2	13.1	14.2	15.5
Tooty Frooties	8.4	N.A	10.4	11.1	12.2	13.1	14.2	15.5
Chewits	8.4	N.A	10.4	11.1	12.2	13.1	14.2	V
LOLLIES								
Niblet	8.4	9.1	10.6	11.1	12.1	13.2	14.2	?
Drumstick	?	N.A	10.4	11.1	12.1	13.1	14.2	?
Vampire	?	?	10.6	?	12.1	13.1	14.3	?
Funny Feet	?	9.5	10.3	11.4	12.1	13.1	14.2	15.4
Cornetto	V	9.5	10.3	?	12.2	13.1	14.2	V

N.A. stands for non-applicable

? stands for lack of information

V means that it varies depending on each individual item

APPENDIX XX

LIST OF ALL THE PHOTOGRAPHS OF FOOD SHOPS USED FOR THE ETHNOGRAPHIC INTERVIEWS

1 Baked Potato Shop with a poster in the window advertising Slush Puppie drinks.

2 SPUD-U-LIKE baked potato shop.

3 Crawford's bakery with pastries and bread in window.

4 Macvitties Guest Bakers with pastries in window (picture not very clear).

5 Chinese Carry Out with large panel listing all dishes available.

6 Mr. Boni's Ice Cream Parlour with a panel listing items available at the back of shop (dark on picture).

7 Main entrance of the largest Safeway supermarket in the city.

8 Main entrance of a large St. Cuthbert's supermarket.

9 A general store in West Pilton.

10 A branch of Roots with foods in window not clear on picture.

11 Real Foods "natural food" store. No window display.

12 C. Barr Newsagent Confectioner Tobacconist with toys, drinks, crisps, biscuits, etc. displayed in the windows and a very large Silk Cut advertisement.

13 A C.T.N. advertising "ICES CONFECTIONS TOBACCO AND GENERAL" with its window completely covered with 31 large jars of colourful sweets, drinks, cigarettes and other similar items.

14 C.T.N.-Grocer-Fruiterer with Wall's panel outside and a large advertisement of Globe soft drinks.

15 C.T.N. called "Confectionery and General" with a large advertisement of Globe soft drinks. Some apples, oranges and bananas can be seen in the window.

16 A branch of Alex Munro butcher shop with display of meat in window (not clear on picture).

17 A branch of Capital Meat Centre large butcher shop with display of meat and fruit juice cartons in window (not clear on picture).

18 CTN-Grocer-Fruiterer with a large Silk Cut advertisement and two distributors of bubble gums by the entrance outside. Also several boxes of fruits, vegetables and flowers.

19 A branch of Rankins with display of fresh fruits and vegetables in window.

20 A fish and chips take-away with a couple coming out carrying a package that looks like chips in paper wrapper.

21 Brattisani's Carry Out restaurant with ice cream cones piled in windows.

22 Chip shop called "Pasquale Cafe-Restaurant" with a large advertisement of Globe Soft Drinks. A man is coming out with something that looks like chips in paper wrapper.

23 La Palma fish and chicken bar Carry Out food bar with Globe soft drinks advertisement and pictures of chicken drumsticks with chips in the window.

24 The Chippy. Very dull picture of a chip shop in West Pilton. The pictures give no clue apart from the name as to what sort of shop it is.

25 The back of an ice-cream van with piles of white foam cups in window and an advertisement of Globe soft drinks. Also shows not clearly two clients buying things.

26 A fishmonger with fish and eggs displayed in the window.

27 A fishmonger with fish and eggs display.

28 Jaw's. Fish and chips, snacks van. There is a panel saying "Hamburgers, tea and coffee" at the front. There are vague images of sweets in the window.

29 Inside a large very colourful C.T.N. A little girl with a woman are buying ice cream.

APPENDIX XXI

QUESTIONNAIRE USED AT THE END OF THE ETHNOGRAPHIC INTERVIEWS

	STATEMENTS	T	N.T.
1	I like better a playpiece that I can share with my pals	4	0
2	It doesn't matter if a playpiece makes your fingers sticky or greasy	1	3
3	A good playpiece is something that you can eat without the help of a grown up to cut it, dish it out or cup it out for you	4	0
4	I like better a playpiece that I don't have to eat or drink all at once	2	1 (1 "don't know")
5	A good playpiece is made of small pieces of food	4	0
6	A drink can be a playpiece if it is in a small packet or bottle	3	1
7	I like better to eat a playpiece alone than with my pals	1	3
8	I like to save parts of a playpiece to have what is left of it later	3	1
9	A good playpiece is something that you can chew, crunch or suck	4	0
10	I like to sit and stay quite when I have a playpiece	2	2
11	You don't need utensils or dishes to eat a playpiece	4	0
12	A playpiece is something you can have at any time of the day	4	0
13	It is better for a playpiece to be in a packet	3	1

	STATEMENTS	T	N.T.
14	I like better to have a playpiece at home than in the streets	3	1
15	The best time to have a playpiece is between meals	3	1*
16	A good playpiece is something you can play with	2	2
17	A good playpiece is salty or sweet	1	3

* The actual response was "after a meal"

Give us a playpiece, please; not lectures!

NICOLE ROUSSEAU
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NTRODUCTION

EVER SINCE the determinant role of nutrition in health has been recognized, health professionals have multiplied their efforts to change people's ating habits. One of the most extensively used trategies has been nutrition education, i.e. attempting y various means to convince the population to eat etter, often focusing on a target group such as elder-es, pregnant women or school children. It is now dmitted that this type of intervention has limited uccess, particularly among the groups most at risk. he present paper advocates the need for a different pproach to the modification of eating habits. It ummarizes a research project undertaken in four rimary schools of a large Scottish city and, on the basis f the findings, introduces suggestions for action in the phere of school children nutrition.

URPOSE OF THE STUDY AND THEORETICAL RAMEWORK

HIS PROJECT began by observing children eating in reets, homes, schools and recreational or other set-ngs with the objective of discovering what they value foods, especially in the foods they buy themselves. It as soon found that children's favourite foods shared me physical characteristics, i.e. they were different in ste, texture, temperature, shape, size and visual spect from foods preferred by adults. It became quite bvious also that the availability of certain foods played role in their popularity among children. Finally, ildren were observed to differ from adults in their atterns of eating, i.e. at what time, in which setting ey eat, and in their use of utensils or dishes. At the me time, indications from the literature that socio-conomic classes are related to the quality of nutrition ad to be considered. This last factor is clearly pointed ut in the recently published report *Inequalities in ealth* (1982) which also mentions the importance of vailability by stating "access to good food and sport cilities depends also on the area in which people live nd the resources they can command."[1]

Purpose of the study

rom the beginning, it was realized that the problem of oor eating habits had to be approached from a multi-mensional and dynamic perspective. The purpose of e project was therefore to identify factors influencing od consumption by primary school children with rticular attention to their patterns of eating, the aracteristics of the foods consumed, the availability foods in the school environment and the fact of elonging to privileged as opposed to underprivileged cial classes.

Theoretical framework and hypotheses

ims[2] *et al.* (1972) have developed a conceptual model r the study of nutritional status of pre-schoolers which integrates the concepts of technological, bio-physical and socio-cultural factors in addition to family influences. This model was modified to adapt it to the study of food consumption by children attending school and also to include the concept of dynamic interactions between child and environment.[3] The present project was developed around the thesis that these dynamic interactions result in and maintain a set of life experiences and values related to eating that contribute to a culture of childhood.

James (1979) argued that the process of becoming social, rather than being a "passive mimicry of others", should be seen "in terms of an active experience of contradiction, often with the adult world".[4] In examining the characteristics of cheap foods very popular among children (which they call 'Kets'), she affirms that children do not buy 'kets' simply because they are cheaper but because they have the following characteristics:

a) "names which emphasize their inedibility and rubbishy content in adult terms";
b) shapes of animals "whose consumption is normally abhored by adults and which are surrounded by dietary taboos";
c) colours such as "the luminous blues and fluorescent oranges of the 'Fizz Bomb' and the vivid yellows and reds of many jellied 'Kets'.";
d) textures which provide "a unique digestive experience" such as the tingling sensation gained from eating 'Fizzy Bullets', 'Fizz Bombs' or 'Fruit Fizzle';
e) "ferocious taste";
f) and no wrapping which provides "the necessary separation between the inner and outer body" so dear to adults but not to children.[5]

She also describes how adult eating conventions are disregarded by children while consuming kets.

In the light of the observations made and of the literature on the subject, the following hypotheses were formulated:

1. The patterns of eating of primary school children differ depending on whether they eat alone, with their peers, or in the company of adults.
2. The characteristics of the foods that children eat alone or in their peers' company differ from the characteristics of the foods they eat in adults' company.
3. The availability of foods in their school environment influences the food consumption by primary school children.
4. Social class of primary school children influences their food consumption.
5. Presented with a series of photographed foods, children tend to choose the items visually more appealing regardless of their nature.

Only hypotheses No. 1, 2 and 5 have been retained for the present paper together with related methods and findings.

The patterns of eating included the following variles and categories:

e of dishes or utensils: No use; Container only; Utensil only; Both dish and utensil.

tting: Child's home; Street/bus/schoolground; School buildings; Other home; Other setting.

me of consumption: Before or at breakfast time; Morning; Lunchtime; Between lunch and dinner; Dinner time; Between dinner and bedtime; Bedtime.

The characteristics of foods referred to:

ste: Sweet; Savoury, Mint; Fruity, Chocolate; Salt and vinegar; Other.

xture: Liquid; Semi-liquid; Soft; Chewy; Hard; Effervescent; Crispy.

mperature: Hot/warm; Room temperature; Cold; Frozen.

ape: Shapeless; Cubiform/square/rectangle flat; Long cylinder/rectangle; Spherical/disc-shaped; Animal/human/monster; Carton; Bottle/can; Other.

e: Packet; Mouthful or smaller; Bigger than mouthful.

ual Aspect: Natural; Unwrapped appealing to adults; Unwrapped appealing to children; Wrapped appealing to adults; Wrapped appealing to children. For this last variable, more operational criteria were veloped on the basis of James' article to judge visual pects as being appealing to adults or appealing to ldren.

ETHODS

Selection of schools and sampling

ing the attendance of a private school or a school ated in a depressed area as an indicator of belonging either a relatively privileged social class or an derprivileged one, two private schools and two ools in a depressed area were selected. In order to asure the effect of availability of foods, one of the o schools in each category was chosen from a densely nmercial area, the other not. A stratified random nple of four (4) boys and four (4) girls from each de was drawn from each school, thus resulting in a al sample of 56 children per school. A total of 192 ter-of-consent forms were returned corresponding to number of children interviewed. The distribution of jects was as below:

Sex:	Female	Male	Total per school
hool:			
vate (low ilability)	21	25	46
vate (high ilability)	26	26	52
pressed (high ilability)	24	19	43
pressed (low ilability)	26	23	49
tal	97	93	190*

Excluding two (2) respondents whose sex was not orded.

Strategies of data collection

24-hour-recall interview was done during school urs with each child. It consisted basically in asking respondent "What have you been eating yesterday m the moment you woke up until you went to ep?" Probing was used to obtain information evant to each of the variables listed above. The child was also asked who was with her or him for each instance of eating in order to contrast in the data analysis the foods consumed alone or with peers (children's eating), with the foods eaten in the company of adults (adults' eating). This interview ended with a question about pocket money.

In order to test hypothesis No. 5, a 'shopping game' was used at the end of the 24-hour-recall interview. This game consisted of a series of sixteen (16) photographs of foods and of tokens allowing the child to buy one food with each token given. The game was "played" in three (3) steps. In step 1 the child was given five (5) tokens; in step 2, three (3) tokens, and in step 3, only one token to buy one food. The interviewer was recording on the interview schedule the identification number of the foods bought in each step.

The food products used were chosen for their contrasting popularity among children and their visual qualities. They were categorized as follows:

Popular foods in their original appealing form (Can of Coca-Cola, Smarties, Monster Munch crisps, Orange drink).

Popular foods in an unappealing form (Same products as above but in a dull packaging).

Unpopular foods in an appealing form (Packet of walnuts and dates, Fresh pineapple, Pure orange juice, Flavoured milk). An attractive package was especially produced by a professional designer and identified as a packet of walnuts and dates called "Datnuts".

Unpopular foods in an unappealing form (Same products as above but in a dull presentation).

The photography work, the processing and printing were done by professional photographers, and the pictures were 3 by 4 inches in size. The nature of the food was identified in print at the bottom of each picture and the interviewer was reading this description as she was displaying the cards before the child. The photographs were consistently positioned according to the pattern below:

(P.A.)	(P.U.)	(U.U.)	(U.A.)
(U.U.)	(P.A.)	(U.A.)	(P.U.)
(P.U.)	(U.A.)	(P.A.)	(U.U.)
(U.A.)	(U.U.)	(P.U.)	(P.A.)

P.A. = popular appealing; P.U. = popular unappealing

U.U. = unpopular unappealing; U.A. = unpopular appealing

Two experienced female interviewers were trained and they shared with the investigator the 192 interviews to be done.

In order to have a better qualitative understanding of the data, the investigator did a total of 22 ethnographic interviews with four (4) girls and three (3) boys, all from grade 2 in the four participating schools. Each of these interviews was developed on the basis of the findings from the previous interview(s) following Spradley's approach.[6] On the assumption that a culture is a system of meaningful symbols, he argued that it becomes necessary to study meaning carefully. The method he suggested consists of selecting informants who can be considered as experts in the culture under study. Through a variety of interviewing techniques and concomitant analyses the ethnographer tries to discover the domains that the informants use to organize their cultural experience and knowledge. Cultural themes underlying these domains can then be found and these themes disclose the meaning that the various aspects of a culture take in the eyes of the informants.

More than 200 pictures of foods, food shops and children eating were used during those interviews. They were all done concomitantly with the 24-hour-recall interviews during the after-lunch playtime; thirteen (13) out of the 22 were tape recorded. All data were collected in October and November 1981.

3) Analysis of data

The data obtained through the 24-hour-recall interviews were coded in consistence with the variables studied and the predetermined categories listed previously. Each food item reported by the 192 respondents was taken as a case which meant a total of 2,437 cases. The nature of these foods was identified by attributing to them one of the 61 pre-determined categories. These categories were descriptive such as 'tea with milk and sugar', 'chips', 'cooked vegetables', or 'biscuits' to avoid making any judgment regarding the nutritional qualities of the foods as this study was not a nutrition survey.

The data obtained through the 'shopping game' were coded separately by attributing a score to each card thus:

Each time a food was chosen in step 1 it scored 1 point, in step 2 it scored 2 points. The single food selected in step 3 was attributed 3 points. A score of zero (0) was given to all non-chosen foods no matter the step.

All coding was done by the investigator; the data were processed by computer and analysed using the Statistical Package for the Social Sciences. The analysis is still under way. Therefore new aspects of the findings may appear later, particularly with regard to the ethnography.

TABLE I Patterns of Eating Depending on Whether the Foods Are Eaten by the Child Alone or With Peers, or in the Company of Adults

VARIABLES	PATTERNS OF EATING	Foods Eaten Alone or With Peers (Children's eating)	Foods Eaten With Adults (Adults' eating)	Total	Chi-square
USE	No Use	361	363	724	X^2=483.21
	Container/Dish	59	453	512	
	Utensil and/or Dish	105	1077	1182	d.f.=2
	Unknown Use	(1)	(9)	(10)	p < .001
	Total	525	1893	2418	
SETTING	Home/School	239	1882	2121	X^2=1068.34
	Out	287	20	307	
					d.f.=1
	Total	526	1902	2428	p < .001
TIME	Meal Time	202	1569	1771	X^2=226.79
	Between Meals	324	333	657	
					d.f.=1
	Total	526	1902	2428	p < .001

Note: Values in () have not been included in the calculations.

BLE II Characteristics of Foods Depending on Whether These Foods Are Eaten by the Child Alone or With Peers, or in the Company of Adults

VARIABLES	CHARACTERISTICS OF FOODS	Foods Eaten Alone or With Peers (Children's eating)	Foods Eaten With Adults (Adults' eating)	Total	Chi-square
TASTE	Sweet/Savoury/Other	309	1473	1782	X^2=103.82
	Mint/Choco./Salt and Vin.	102	120	222	
	Fruity	110	297	407	d.f.=2
	Unknown Taste	(5)	(12)	(17)	p < .001
	Total	521	1890	2411	
TEXTURE	Liq./½Liq./Soft/Chewy	265	1527	1792	X^2=191.67
	Hard/Efferv./Crispy	255	361	616	
	Unknown Texture	(6)	(14)	(20)	d.f.=1
					p < .001
	Total	520	1888	2408	
TEMPERATURE	Hot/Warm/Cold	150	1256	1406	X^2=242.42
	Room Temp./Frozen	375	634	1009	
	Unknown Temp.	(1)	(12)	(13)	d.f.=1
					p < .001
	Total	525	1890	2415	
SHAPE	No Shape/Cub.Sq./Cyl./Rect.	341	1591	1932	X^2=139.34
	Anim./Hum./Mons./Bot./Can	29	6	35	d.f.=3
	Spherical/Round Flat	87	194	281	
	Unknown shape	69	111	180	p < .001
	Total	526	1902	2428	
SIZE	> Mouthful	235	1196	1431	X^2=56.69
	Packet/Mouthful or <	284	685	969	d.f.=2
	Unknown size	7	21	28	p < .001
	Total	526	1902	2428	
VISUAL ASPECT	Natural/Appeal Adults	328	1666	1994	X^2=190.56
	Appeal Children	132	186	318	
	Unknown Appearance	66	50	116	d.f.=2
					p < .001
	Total	526	1902	2428	

te: Values in () have not been included in the calculations.

FINDINGS

FREQUENCIES DISTRIBUTIONS of the data and cross tabulations of the variables were obtained first before any grouping of the categories to see if any pattern was emerging. As these first analyses clearly indicated contrasts between children's eating (foods eaten alone or with peers) and adults' eating (foods eaten with adults) cross tabulations and chi-squares were repeated, this time grouping the categories that appeared to go together.

1) Testing hypothesis No. 1

As stated earlier, patterns of eating referred to such variables as **use** of dishes or utensils, **setting**, and **time** of consumption. According to the thesis put forward in this research, the expected difference between children's eating and adults' eating should go in the following direction: Foods eaten by children alone or with their peers should be eaten significantly more often between meals, in unstructured settings and without the use of dishes or utensils. Conversely, foods eaten in the company of adults should be consumed at mealtime, in structured settings such as homes or schools, and using utensils and dishes.

Table 1 shows that this hypothesis is strongly supported by the data with chi-squares indicating correlations at a significance level of less than ·001 between some patterns of eating and the fact of eating in the company of children as opposed to eating with adults. For this table, the category of **Setting** 'Home/School' refers to 'Child's home', 'School buildings', and 'Other homes' whereas the category 'Out' groups all other settings. In the variable **Time**, the category 'Mealtime' includes 'Bedtime' in addition to 'Breakfast, Lunch, Dinner'.

2) Testing hypothesis No. 2

According to this hypothesis, foods eaten with children should contrast in their characteristics with foods eaten in the company of adults, i.e. they should share **Tastes, Textures, Temperatures, Shapes, Sizes** and **Visual Aspects** typical of children's eating as opposed to adults' eating.

Table II with all chi-squares again indicating correlations at a significance level of less than ·001 between some characteristics of foods and the fact that they are eaten in children's company as opposed to adults' company strongly supports the hypothesis.

The groupings of categories for each variable appear in the table itself and, as in the case of Table I, they come from the tendencies observed in the cross tabulations done before any grouping. To understand better the meaning of these findings, some precisions about the coding of the food items are needed. For the variable **Taste**, all fruit-flavoured sweets were coded 'Fruity'. Thus for this variable, fruits appear in the same category as sweets. All meats, apart from minced meats, were coded 'chewy' with the consequence that chewy sweets and bubble gums enter the same category of **Texture** as meats. The **Shape** of sausages and chips was coded as 'Long cylinder/rectangle' putting them in the same category as many sweets shaped alike. Finally, all biscuits were coded 'Bigger than mouthful' in the variable **Size**. It is the investigator's belief that the overall effect of this way of coding worked against the hypothesis and it makes the findings even more significant.

In summary, children's foods have strong tastes (mint, chocolate, salt and vinegar) a hard, effervescent or crispy texture, interesting shapes (animal/human/monster, bottle or can) and visual qualities appealing

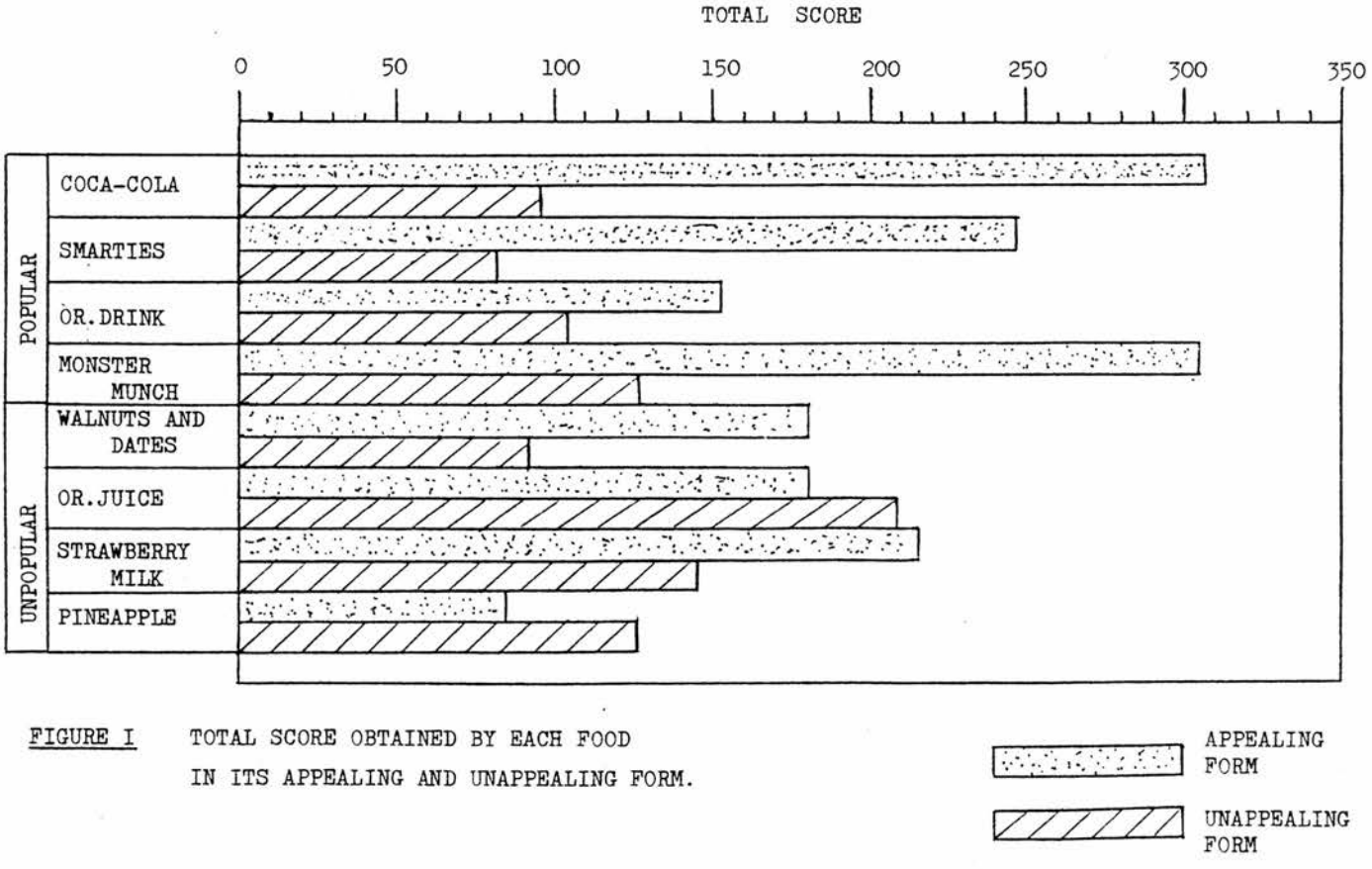

FIGURE I TOTAL SCORE OBTAINED BY EACH FOOD IN ITS APPEALING AND UNAPPEALING FORM.

o children (vivid colours, amusing cartoons, fantastic tories, etc.). They are more often eaten at room emperature or frozen and they are the size of a 'bite'.

) Testing hypothesis No. 5

To support this hypothesis, the findings must not only provide low scores for popular foods in their dull packaging but also high scores for unpopular foods in attractive forms. Figure 1 shows that popular Coca-Cola, Smarties, orange drink, and Monster Munch crisps do score lower if deprived of their appealing visual qualities. However, the unpopular walnuts and dates, pure orange juice, strawberry milk drink, and pineapple do not consistently score higher in their more attractive forms.

Several factors can explain these findings but this discussion would be lengthy and meaningless without the actual coloured photographs used.

1. Meals			
	Fruits and Vegetables		An apple An orange A packet of grapes A banana A small piece of cucumber Pickled onions A raw carrot
2. Playpieces	Sweets	Sweeties	Marshmallow Marshmallow sweet Pair of glasses Jelly man Jelly worm Dummy or Baby suck Chocolate ball Chocolate monkey Chocolate teddy bear A pig Cola bottle Cola cube Jaw breaker Gob stopper Licorice pipe

FIGURE 2 PARTIAL TAXONOMY OF THE DOMAIN "KINDS OF FOODS" CONTRASTING THE SUB-DOMAINS "FRUITS AND VEGETABLES" AND "SWEETS".

As a general conclusion to the testing of hypotheses, it appears that children do share a set of values related to foods and eating as opposed to values of adults. However, a closer examination of Table II should prevent any excess of enthusiasm. First, the number of missing data is high for almost all the variables. Also the chi-squares are not as large as in Table I (patterns of eating) even though they remain highly significant. The difficulty and subjectivity of measurement of these variables must not be ignored. Finally, the mere definition of "children's eating" as being all consumption of foods done in the presence of children or alone as opposed to eating in the company of adults must be questioned. The ethnographic interviews resulted in a definition of children's eating by the children themselves thus providing a more relevant view of the subject.

4) The ethnographic perspective

After having completed several 24-hour-recall interviews, the investigator's attention was called by an expression repeatedly used by the respondents: "For my playpiece I had . . .". This 'playpiece' referred to a food the child had brought to school to eat during the morning break. It was hypothesised that the word could have a more extended meaning and perhaps would contain children's values associated with eating. At the moment of this observation, four ethnographic interviews had already been completed and had not revealed much useful information. It was therefore decided to explore this concept of playpiece. The use of this word with children obviously hit a target as their attitude showed how meaningful this concept was to them. The ten domains listed below were eventually discovered and analysed.

Domains of children's eating

1. Kinds of foods
2. Places to buy
3. Places to have
4. Times to buy
5. Times to have
6. Ways of buying
7. Ways of eating
8. Ways of playing with
9. Reasons to have
10. Reasons to choose

} a playpiece

These domains were examined with unequal attention as the investigator was more interested in discovering dimensions of food consumption that could guide future preventive interventions than to provide an in-depth analysis of some (or all) aspects of children's eating. The domain 'Kinds of foods' for example was studied in detail as it was considered important to know precisely what kinds of foods could be identified as playpieces. This domain is divided into two broad categories: meals and playpieces.

The sub-domain 'playpieces' includes the following terms each of which covers sub-categories and dozens of individual items per sub-category.

Kinds of playpieces:

1. Chips*
2. Buns and cakes*
3. Drinks*
4. Crisps
5. Biscuits
6. Lollies
7. Ice cream*
8. Fruits and vegetables*
9. Nuts*
10. Gums
11. Sweets
12. Things made with sunflower seeds
13. Cheese*
14. Sundries*

All items followed by an asterisk refer to categories which raised disagreement among informants as to whether they could be playpieces or not. It was found that almost invariably these 'borderline' foods became acceptable as playpieces if they were presented in a small container (in the case of drinks) or package (for dry items). The children called 'packet' all foods thus packaged even the liquid ones. It was also evident that they preferred a packet of small pieces of foods, rather than one big piece in a packet, as small pieces are easier to share or to save for later consumption.

It will come as no surprise that the sub-domain 'sweets' is not only the largest but the most varied. It includes Snowballs, Space Dust, chewing gums, chews, chocolates, sweeties, bars, Polos, lollies, sherbets, sweetie cigarettes and probably several other kinds of sweets. The word "Ket" was never mentioned by any of the informants. Figure 2 illustrates the position of "sweeties" in the domain 'Kinds of foods' and lists some of the terms included in the concept 'sweeties'; it also contrasts the two sub-domains 'Fruits and vegetables' and 'Sweets'. Sweeties vary in tastes, textures, shapes, and colours more so than fruits and vegetables. Considering that sweeties constitute only one of the eleven 'Kinds of sweets', the sub-domain 'Fruits and vegetables' appear very meager in comparison.

The domains 'Places' and 'Times to have a playpiece' reveal that a playpiece could be eaten anywhere, at any time but meal time. The two 'Ways of eating' associated with the greatest variety of playpieces were 'biting' (chewing or crunching) and 'sucking'. Of course you do not normally use utensils or dishes to eat a playpiece!

An analysis of the domain 'Ways of playing with a playpiece' disclosed what children seem to value the most in foods: the possibility to play with them or at least to eat them while they play, i.e. *eating must not interfere with playing*. It must be emphasized, however, that other aspects are also valued such as the cost, the taste and how long the food lasts.

Overall, this qualitative analysis supports the more quantitative one summarized earlier and shows that the visual aspect of foods plays a role in their popularity but a role that is complementary rather than determinant. Instead it appears that children classify foods on the basis of their compatibility with play along a continuum going from the least acceptable ones (the meals) to the most desirable ones (the favourite playpieces). In between are the borderline foods that can be accepted as playpieces under certain conditions in specific contexts.

Following is an illustration of one such continuum:

Least valued foods — *Most valued foods*

Meal ⟶ Borderline ⟶ Ideal playpieces

Spaghetti
Glass of fruit juice
Chips
Grapes
Can of Coca-Cola
Biscuits
Smarties
5p worth of sweeties in a 'wee bag'

It must be well understood that the position of most borderline foods can be modified if some of their characteristics are altered. For example, the fruit juice could move to the playpiece end of the continuum if it were in a 'packet' rather than a glass; on the contrary the can of Coca-Cola would lose its enviable status if transferred into a cup. Chips in a plate are not accept-

e as a playpiece but would be so to some children if in a wrapper. "Grapes in a bag would do" as a ypiece to quote an informant; otherwise, they fall o the meal group. The status of a biscuit can change matically whether it is cheesy or sweet, wrapped or . On the other hand, some foods are definitely at the remes of the continuum: spaghetti will never be a ypiece and a little bag of sweeties can never be wngraded' to the status of meal no matter how hard try by force of nutrition education. This should give d for thought to health educators!

PLICATIONS FOR HEALTH EDUCATORS

ALTH EDUCATORS must realize that if Monster nch crisps, Smarties, Chewits and various sweeties so popular among children it is not only because y are visually attractive, heavily advertised, or aper than recommended foods. Rather *they have ome popular because they match children's needs:*

e need to eat in small quantities at any time of the ay and anywhere, i.e. to control one's eating;
e need to manipulate foods directly with their hands;
e need to crunch and chew;
e need to socialize by sharing their food;
e need to fantasize and play.

Simply telling them that they should avoid those ds because they are not good for their health is not y ineffective, it is wrong. Wrong because it inter- es with their psychophysical and social development. ong because it is asking them to rationalize and obey erdictions while they are not ready for logical argu- nts and while their whole environment often contra- ts these messages.

Health educators must understand that they will er get very far for very long by trying to adapt dren to recommended foods. Instead it is suggested e to adapt recommended foods to children. In this pect, it is very encouraging to find such foods as ns, fruits and vegetables and cheese among the -domains of playpieces even if their presence there is controversial and conditional. The overall objective should be to move borderline foods towards the playpiece end of the continuum by altering their physical characteristics and fitting them into the patterns of eating of children. As an example, instead of giving children boiled mashed carrots and cheese macaroni to eat quietly sitting at a table at lunch time, they should be offered a cheese roll with sticks of raw carrots to take out if they wish. They are obviously hungry well before lunch and it would seem more sensible to spread between the two breaks and lunch time the nutritional value they are presently offered (but do not necessarily consume) at lunch time.

In summary, all we need to do is to pay more attention to children whose eating behaviour clearly tells us: **Give us a playpiece to bite at playtime in the playground** . . . in a packet.

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